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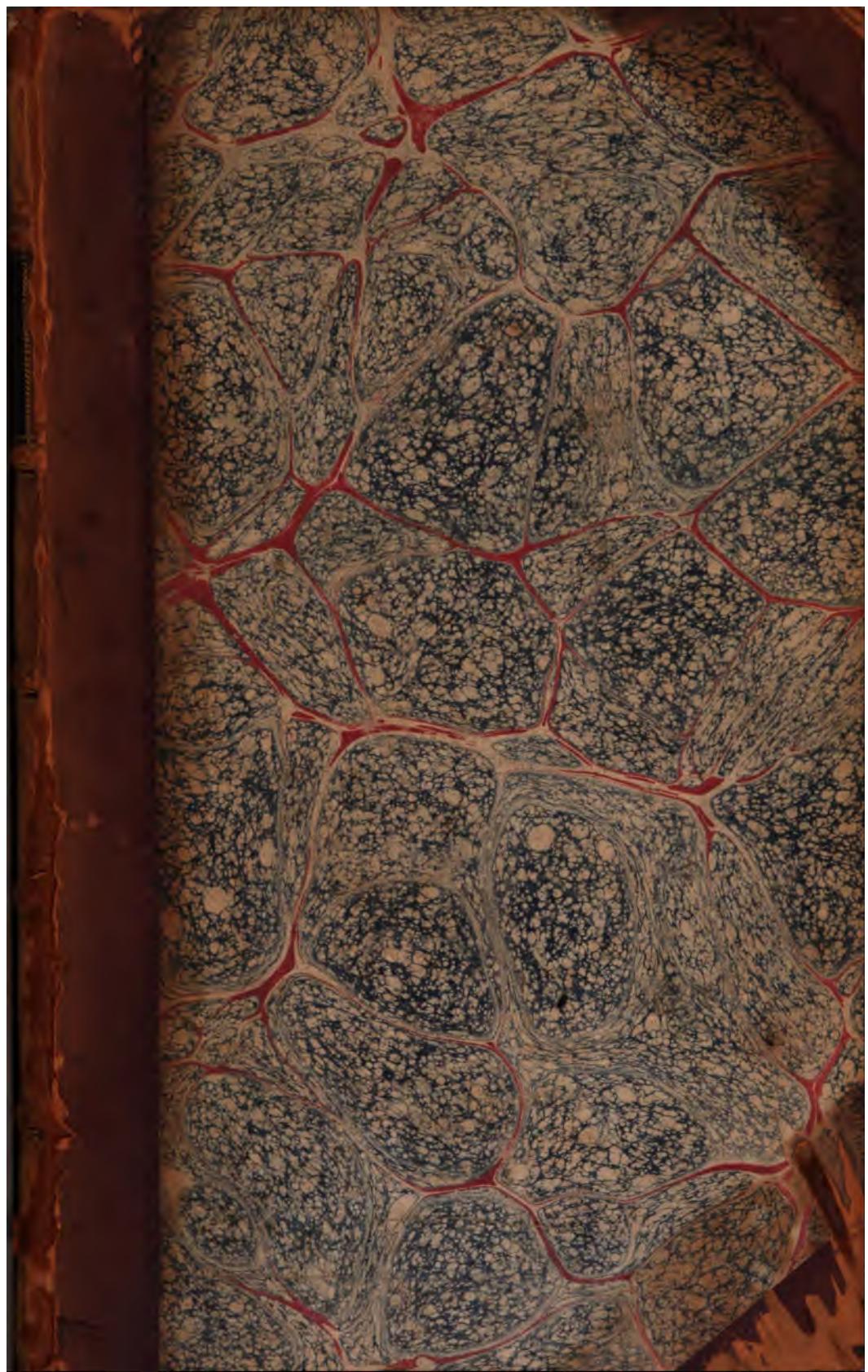
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# PRACTICAL TREATISE

ON THE

# TYPHUS OR ADYNAMIC F E V E R.

By JOHN BURNE, M. D.

LICENTIATE OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON;  
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SOCIETY OF LONDON;  
AND FORMERLY PRESIDENT OF THE ROYAL MEDICAL SOCIETY OF  
EDINBURGH.

Nam ne agricolam quidem aut gubernatorem disputatione, sed usu fieri.  
CELSUS.

LONDON:  
LONGMAN, REES, ORME, BROWN, & GREEN,  
PATER-NOSTER ROW.

1828.

146.

PRINTED BY G. HAYDEN,  
Little College Street, Westminster.



TO

**SIR HENRY HALFORD, BART. K.C.H.**

**PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON,**

**AND PHYSICIAN IN ORDINARY TO THE KING;**

**&c. &c. &c.**

**THIS WORK**

**IS,**

**WITH HIS PERMISSION,**

**MOST RESPECTFULLY DEDICATED**

**BY**

**THE AUTHOR.**



## P R E F A C E.

---

THE many works which have been published on fever would seem to discountenance any addition to their number ; but, if we consider the limited views of some authors and the biassed doctrines of others, we shall confess that there is yet much wanting to perfect our knowledge of this disease.

The late as well as the ancient writers had to contend with the disadvantage of a defective acquaintance with morbid anatomy ; and, therefore, could not possess the means of attaining correct notions of the nature of fever.

Some authors of the present day are also defective in this particular ; and

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dividually and collectively, I began to perceive that certain signs and states were common to all the cases; that the fever attacked in two ways; and that certain phenomena succeeded each other uniformly in a particular order: and, by comparing the phenomena with the morbid appearances, as seen by dissection, I found, also, that particular symptoms always preceded particular organic changes.

In this way, then, was I led to discover the relation of the particular conditions and of the phenomena one to another and to the disease itself; and the mutual dependence of the various causes, as well as the rank they hold in the long concatenation of cause and effect: and in this way also, was I led to consider all the variously denominated fevers, as the epidemic, low nervous, jail, hospital, putrid, typhus, synochus, &c. as one and the same disease,

differing only in degree according to the intensity of the primary cause; modified by any peculiar condition of the body or mind; and accompanied or unaccompanied by local inflammation, according as any part or organ was disposed to inflammation, or as the body was or was not subjected to the operation of any exciting cause.

It was the information thus obtained which suggested the arrangement adopted in the present Treatise; and the opinions which I have advanced were deduced from the facts weighed and considered deliberately and with caution.

Although, in this Treatise, I have scarcely alluded to the works of the authors who have written on fever, I trust my silence will not be construed into disregard. I have not quoted authority, because my

object was not to repeat what others had said, but to record what I myself had seen.

The materials of this work have been, in great measure, collected in the extensive field afforded by Guy's Hospital; and I should be ungrateful if I did not take this opportunity of acknowledging the extraordinary facility, and even inducement, which is there held out for the prosecution of medical science; and particularly of that most important branch, morbid anatomy: all which advantages spring chiefly from the zeal and energy of the principal and excellent director of that celebrated establishment.

J. B.

24, *Spring Gardens*,  
*Feb. 1828.*

## CONTENTS.

	Page.
Of the Typhus or Adynamic Fever .. . . . .	1
Division of Continued Fever .. . . . .	3
Reasons for Adopting the Title "Adynamic" .. . . . .	7
Definition of the Term Adynamic .. . . . .	11
 CHAP. I.	
The Simple Adynamic Fever .. . . . .	13
The Two Ways of Attack .. . . . .	13
The Way of Attack without an Accidental Cause .. . . . .	14
The Way of Attack with an Accidental Cause .. . . . .	17
The Four Degrees of the Adynamic Fever .. . . . .	19
First Degree .. . . . .	19
Second Degree .. . . . .	20
Third Degree .. . . . .	21
Fourth Degree .. . . . .	25
 CHAP. II.	
Some Peculiarities which differ from the usual Combinations of Symptoms .. . . . .	28
Peculiar Manner of Attack from Mental Distress .. . . . .	31
Peculiar sudden Manner of Attack .. . . . .	32
Hemiplegic Paralysis during the Course of the Adynamic Fever .. . . . .	33
Peculiar Adynamic State .. . . . .	34
Congestive State .. . . . .	36

	Page.
<b>CHAP. III.</b>	
The Adynamic Fever accompanied with Local Inflammation	40
Local Inflammation after the Decline of the Adynamic Fever	49
<b>CHAP. IV.</b>	
Pulse	51
Tongue	59
Tympanitic Belly	63
Diarrhoea	67
Black Offensive Diarrhoea	67
Ochre-coloured Diarrhoea	69
Retention of the Urine	71
Condition of the Blood	75
Condition of the Blood after Death	77
Deafness	79
<b>CHAP. V.</b>	
Causes which retard Convalescence or prevent Recovery	81
Convalescence	88
Relapse	91
<b>CHAP. VI.</b>	
Primary Cause	96
Accidental or Exciting Causes	98
Distinguishing Signs	100
Prognosis	104
<b>CHAP. VII.</b>	
Pathology of the Adynamic Fever	110
Morbid Appearances in the Brain	114
Effusion into the Lateral Ventricles	119
Rationale of the Morbid Appearances in the Brain	121

## CONTENTS.

xv

	Page.
Morbid Appearances in the Intestines .. . . .	125
Rationale of the same .. . . .	129
Enlargement of the Mesenteric Glands .. . . .	131
Morbid Appearances in the Bronchial Membrane .. . .	132
Rationale of the same .. . . .	133
Morbid Appearances in the Lungs .. . . .	134
Rationale of the same .. . . .	136
Morbid Changes in the Heart .. . . .	138

## CHAP. VIII.

Rationale of the Signs of the Adynamic Fever .. . .	140
Nervous System .. . . .	140
Delirium .. . . .	144

## CHAP. IX.

State of the Brain as compared with Phrenitis .. . .	147
--	-----

## CHAP. X.

Seat and Nature of the Adynamic Fever .. . . .	152
--	-----

## CHAP. XI.

TREATMENT OF THE ADYNAMIC FEVER .. . . .	164
Emetics .. . . .	166
Aperients .. . . .	167
Bark .. . . .	169
Cold Affusion .. . . .	172
Ventilation .. . . .	174
Febrifuges .. . . .	177
Blood-letting .. . . .	179
Mercury .. . . .	189
Opium and Hyoscyamus .. . . .	193
Stimulants .. . . .	195
Regimen .. . . .	197

	Page.
<b>CHAP. XII.</b>	
<b>SPECIAL TREATMENT.</b>	
Means of Arresting the Development of the Adynamic Fever	199
Early Treatment of the Adynamic Fever with a view to cut it short	203
Treatment of the Adynamic Fever after it is fully formed	206
Treatment of the First Degree	206
Treatment of the Second Degree	207
Treatment of the Third Degree	210
Treatment of the Fourth Degree	214
Treatment of some Peculiarities which differ from the usual Combinations of Symptoms	217
Treatment of the peculiar Manner of Attack from Mental Distress	218
Treatment of the peculiar sudden Manner of Attack	220
Treatment of the Hemiplegic Paralysis	221
Treatment of the peculiar Adynamic State	222
Treatment of the Congestive State	223
Treatment of the Adynamic Fever accompanied with Local Inflammation	224
Treatment of Local Inflammation occurring after the Decline of the Adynamic Fever	226
Treatment of the Tympanitic or flatulent distended Belly	227
Treatment of the Black offensive Diarrhoea	228
Treatment of the Ochre-coloured Diarrhoea	232
Treatment of the Retention of the Urine	235
Treatment of the Delirium	241
Treatment of those Causes which retard Convalescence or prevent Recovery	245

A

PRACTICAL TREATISE  
ON THE  
TYPHUS OR ADYNA  
MIC  
F E V E R.

---

THE occasional prevalence of a very destructive fever has, of late years, much attracted the attention of professional men, giving rise to useful discussions, and birth to many valuable works. But although individuals, of great research and observation, have very laudably directed their attention to the source and nature of this disease, and to the best methods of prevention and of cure ; still the results of their labours do not lead to similar and satisfactory conclusions, nor do they establish principles which can be embraced without hazard, or depended upon without disappointment.

There is no subject in the whole range of medicine, on which our ideas are more unsettled

## 2. ON THE TYPHUS OR ADYNAMIC FEVER.

than the subject of fever. All the notions which have been set forth concerning it appear to me prejudiced, or vague and undefined, and serve only to perplex and to embarrass. There is hitherto no fixed point from which to start, nothing established as fundamental: the definite and generic name, fever, is applied indiscriminately to its different species; so that the pupil, when he enters on this study, finds himself in the midst of a wood, without a path to direct his course.

With a view to the right understanding and the intelligible communication of any particular subject, it is necessary that the terms pertaining thereto should have a clear and definite signification, so that when they occur, it may be known in what sense they are employed.

Pursuing this principle, I shall premise a few remarks on fever generally, and offer a sketch of its division.

OF THE

DIVISION OF CONTINUED FEVER.

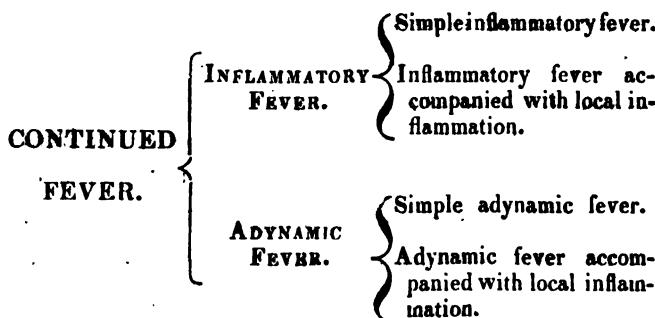
CONTINUED fever divides itself into two species only: one, where the energy of the nervous system is prostrate; another, where its energy is not materially affected. And this division is rational and important, inasmuch as it is a guide to a safe and successful treatment; for, in the one species, active measures may be had recourse to with great vigour; but, in the other, not without great circumspection. This distinction I look upon to be one of the fundamental principles in the practice of medicine, and to be acted on in the treatment of all diseases whatsoever.

By the term fever is to be understood a certain state of body, in which there is preternatural heat of skin and frequency of the pulse, with more or less derangement of the functions generally; so that whenever these signs co-exist in the same person, that person is said to be in a state of fever.

Considering fever then a genus of disease, I shall here propose to divide it into two species, the inflammatory, and the adynamic: and each of these species again into two varieties; that is, the first

#### 4. OF THE DIVISION OF CONTINUED FEVER.

species, the inflammatory fever, into the simple inflammatory fever, and the inflammatory fever accompanied with local inflammation; the second species, the adynamic fever, into the simple adynamic fever, and the adynamic fever accompanied with local inflammation.



The simple inflammatory fever is a very mild disorder, and of very short duration, lasting seldom more than twenty-four hours.

It comes on at the decline of the day, with lassitude and chilliness, which, in two or three or more hours, is succeeded by a preternatural heat of skin, and an increased action of the heart and arteries, causing an accelerated and full pulse; with slight disorder of the functions generally. The heat lasts through the night, giving rise to a degree of restlessness, and preventing sleep. Towards the morning the skin begins to perspire, the patient then falls asleep, and awakes much relieved,

and in the course of the next day finds himself recovered. The usual cause of this fever is a slight cold. The nature of it is an inflammatory excitement spread over the whole sanguiferous system, and borne equally by it, so that no one particular part or organ is affected more than another. This constitutes the most simple form of fever.

Now the existence of such a state of inflammatory fever is questioned by many authors and teachers of medicine, because it has never happened to them to see an example. This is not to be wondered at, for the mildness of the disorder renders the assistance of the physician unnecessary, and therefore it can very rarely come under his cognizance.

It has occurred to me to see a very well marked case, and, being the most simple form of fever, I have felt warranted in making it the basis of the above arrangement.

If, to this simple inflammatory fever, there is superadded inflammation of any determinate part, then we have a state of inflammatory fever accompanied with local inflammation : and of this, all the organic inflammations, as pneumonia, enteritis, hepatitis, and so on, are familiar examples.

Such, I hold to be the simple and natural division of this first species of fever, and in it, the nervous system is not materially affected.

## 6 OF THE DIVISION OF CONTINUED FEVER.

The second species, the adynamic, forms the subject of this Treatise.

These preliminary remarks appeared necessary, in order to obviate any obscurity which the following pages might otherwise present; but as this Treatise is confined to one species of fever, it would be irrelavent to enter further into the consideration of fever generally: such a course would embrace too much, and consequently be inconsistent with the object of this work.

I shall therefore proceed to speak exclusively of the adynamic fever.

REASONS  
FOR ADOPTING THE TITLE  
ADYNAMIC.

THIS species of fever has been variously denominated by authors and nosologists.

Cullen made a division of it into synochus and typhus, and typhus he further divided into the mictior and the gravior, and the gravior has, by some, been styled malignant or putrid. Of late it has been very commonly termed the epidemic, because, in particular years and in particular districts, it has prevailed to an unusual extent. Others have comprehended every stage and variety of this fever under the term typhus; so that there is not merely a confused multiplicity of names, but the same name used by one author in a limited, by another in an extended sense: and hence has ensued great embarrassment, leading men to believe that every title designated a particular kind of fever, and indeed it would seem that authors themselves have believed so too. Now as there is reason to consider all these fevers of one and the same nature, differing only in degree, and modified by circumstances, and as none of the above appellations are

characteristic, I have ventured to rank them all under one head, and to represent them by one name, **Adynamic**: and this title has been selected, partly, because it is authorized by modern writers, but chiefly, because it conveys a correct idea of the pathognomonic features of this disease; the remarkable prostration of the powers of the nervous and muscular systems.

The title **Adynamic Fever**, therefore, is intended to include the putrid or malignant fever of Sydenham; the slow nervous fever of Huxham; the nervous fever of common language; the synochus, typhus mitior and gravior of Cullen; the jail and hospital fever; the fièvres essentielles of the French; the epidemic of the Irish writers; the contagious of Bateman; the typhus of Dr. Armstrong; and the proper, idiopathic, or essential fever of Dr. Clutterbuck.

The title **Typhus**, on account of its antiquity and general use, demands perhaps particular notice before it is discarded.

It is objectionable, first, because it is not used in the same acceptation throughout the profession, one author deriving it from "*Tύφω*," which he translates by "to inflame," another deriving it from the derivative "*Tύφος*," which he translates by "stupor;" and next, because the sense, in which

it was used by the Greeks themselves, does not sufficiently designate any condition by which the typhus or adynamic fever of temperate climates is characterised, and, therefore, it wants the qualification required by the present march of science.

The sense in which the Greek physicians used the word typhus will be seen by the following extracts.

*Tύφω*; Fumum excito, to raise smoke: item accendo seu incendo, inflammo, to burn, to inflame, to set on fire.

*Tύφος*, seu *Tύφας*, ο, ὁ; fumus, smoke: item jactantia, ostentatio, arrogantia, boasting, arrogance, pride, insolence. Exponitur etiam, "stupor attonitus" apud Hippocr.

*Τυφώδης*, adj. decrepidus et capularis, decrepid and at death's door. Apud medicos *Τυφώδης πυρεῖος* dicitur febris quædam continua et ardens; de qua Gal. Comment. in Aphor. 42, l. 7, et Aët. l. 5, c. 82.—  
*Scapula*.

*Τυφώδης*, adj. Etymologo est ὁ ἡλικίαν εχων το τυφεῖαι, eò proiectus ætatis. ut propediem cremandus sit, id est decrepidus et capularis.—*H. Stephani Thesaur. Ling. Græc.*

*Τυφώδης*, adj. the fever called typhoid (*Τυφώδης Hippocr.*) is thus characterized by Galen, "In quibus verò sine partis inflammatione,

## 10 REASONS FOR ADOPTING THE TITLE ADYSTAMIC.

qui in venis continentur humores putrescentes febrem accendunt, in his solis hominem febre conflictari, ipsumque febrem habere dicebant. In his ipsis etiam febrium scripserunt differentias, Epialam, et Lipyriam, et Helcodem, et Typhodem, et Pestilentem, et Causum, appellantes."—*Hippocratis Aphorismi cum Galeni Comment, Septem. Ven. 1582.*

*Τυφών* vel *τυφώς*, ventus quidam repentinus, seu procella: vortex igne factus, seu vortex procellosus et everberans.—*Scapula.*

In the "Etymologicon Magnum"

*Τυφώς* means any of those perils at sea, namely, a violent whirlwind, a flash of lightning, a thunder clap, by any of which men might be stupefied, and deprived of their senses and presence of mind. Hence it came to signify a state of stupefaction, a lethargic disease, in which the patient is deprived of his powers, as if thunder-struck, or lightning-struck.—*Etymolog. Magnum. Operā Friderici Sylburgii Veter. 1594.*

A similar meaning to the above appears to be given by Harpocration (De vocibus liber. Ludg. Batav. 1696.) under the word *τετυφωμαί.*

And *τυφεσθαι* is explained (Hesychii Lexicon,

Ludg. Batav. 1746.) by "*μαραυνεσθαι*" which is rendered in Scapula "marcesco" to putrefy, to grow dull, and "flaccesco" to flag, to grow faint.

## DEFINITION OF THE TERM ADYNAMIC.

Adynamic, (from *a* priv. and *δύναμαι*, possum, to be able, to have power) means a state of debility from a depression or prostration of the powers of the nervous and muscular systems, not ordinary debility, as from loss of blood, or from the wasting of the physical powers, as in phthisis or scirrhous pylorus.

Consequently, in the adynamic fever, the debility is always greater, in proportion, than the emaciation; which is illustrated in the early stages of this fever, where the prostration of strength is great although the emaciation has scarcely begun.

But emaciation is an invariable attendant on the adynamic fever, and goes on with more or less rapidity during its whole course, so that, in the later stages, there is debility from the wasting of the physical powers, superadded to the peculiar debility from the prostration of the powers of the nervous and muscular systems.



## **CHAP. I.**

---

### **OF THE SIMPLE ADYNAMIC FEVER.**

---

#### **OF THE TWO WAYS OF ATTACK.**

THE Adynamic Fever more frequently attacks young persons in the vigour of youth between the age of 18 and 25, having robust constitutions, and who had enjoyed uninterrupted good health up to the invasion of the fever. These peculiarities are remarkable.

In order to the production of the Adynamic Fever, it is necessary that there be a certain state of system, which state depends, in most instances, on a continued exposure to a poisoned or contaminated atmosphere. This state then existing, it will be found that the adynamic fever attacks in two ways; and it is of great importance that these should be clearly understood, because they account for the presence or supervention of inflammation

in some cases, and the absence of it in others, and thus afford evidence that certain modern theories are not founded on correct principles.

In the one way, then, it attacks through the intervention of an accidental cause: in the other, without such intervention. When the attack is without the intervention of an accidental cause, the condition of the body is, of itself, sufficient to stir up and give rise to all those actions and phenomena which constitute the adynamic fever. But, where the attack is with the intervention of an accidental cause, the condition of the body, though not sufficient of itself to produce the fever, is yet sufficient to give to the fever thus accidentally produced, the peculiar adynamic type. In the one case, the development is slow and progressive, requiring many days or even weeks; in the other, it is fully formed in a few hours.

#### OF THE WAY OF ATTACK WITHOUT AN ACCIDENTAL CAUSE.

When this fever attacks without the intervention of an accidental cause, that is spontaneously, the first signs are, a disinclination for food, and a lassitude which quickly grows into weakness, so that there is an inability to get through the occupation of the day; and the patient will go to bed

sooner than usual. To these are soon added, slight head-ache, and a chilliness which runs up the back and drives the patient to the fire.

In a day or two, the disinclination for food increases to a loathing, the weakness grows greater, and the exertion of going up stairs brings on faintness: the head-ache becomes severe, and is often attended with giddiness and dimness of sight, and sickness and vomiting will not unfrequently supervene. There is now pain in the back and limbs, with a feeling of great fatigue; the teeth begin to chatter, and the chilliness amounts to a shivering, which is followed successively by heat and sweating; so that a febrile paroxysm is established.

Now these signs recur every day, uniformly as to themselves, but not always uniformly as to time. In some, the recurrence will be periodical, in which case it commonly happens about noon. An instance of this I remember in a woman who was attacked with the above symptoms, in the order described, every day, between twelve and one o'clock, for more than a week before the fever assumed the continued form. In others, the recurrence will be in the evening, and take place an hour earlier every succeeding day. An example of this occurred in a young girl, who experienced the first attack when she was going to bed as late as nine o'clock; and the next day, the

paroxysm returned at eight, the third day at seven, the fourth day at six o'clock; and so on. In both these cases, the patients felt comparatively well during the morning, and were able to pursue their accustomed avocations.

Other patients will feel ill from the moment they get up, and these, also, experience an exacerbation in the evening. This was the case with a young woman who felt sick every morning, and was languid, cold, and unwell throughout the day, and, at the end of four days, there acceded, in the evening, a perfect, though not violent febrile paroxysm, consisting of the cold, the hot, and the sweating stages; and in this condition she continued to work for three weeks, when the fever became continued, and she was laid up. Other patients will be laid up from the invasion of the first febrile paroxysm, and in these the symptoms mostly run high.

Other patients will feel slightly indisposed for several days, being merely languid and weak, with but little loss of appetite; and then will be attacked, on a sudden, and frequently after a meal, with shivering, pain in the back, severe head-ache, and in some instances, with vomiting, to which succeeds an immediate development of the fever. This manner of attack resembles so much the invasion of eruptive diseases, as sometimes to lead the physicians to expect small-pox, or scarlatina, &c. but

the absence of the precursory signs peculiar to these diseases, and the knowledge of the patient having been indisposed some days previous to this sudden attack, will afford data for a correct diagnosis.

Such, then, are the different modes of the invasion of the adynamic fever, when it attacks without the intervention of an accidental cause, as the taking cold, and, in all such cases, so far as I have seen, the attack is not accompanied with any organic inflammation. It has, also, been shewn that the time required for the development of the fever, in these cases, varies from several days to several weeks ; which forms a striking contrast to the way of attack which is now to be detailed.

#### OF THE WAY OF ATTACK WITH AN ACCIDENTAL CAUSE.

When the adynamic fever attacks through the intervention of an accidental cause ; that cause is generally a severe cold, from exposure to rain, wind, &c.

The first signs are, a feeling of being tired and chilly, and the patient seeks the fire: in a little while, the chilliness runs up the back, and ends in a shivering fit. The teeth chatter ; he has

## 18 WAY OF ATTACK WITH AN ACCIDENTAL CAUSE.

pain in the loins and legs ; severe head-ache ; and his flesh feels sore, as if he had been beaten all over ; and there sometimes supervene sickness and vomiting.

These symptoms will continue for the space of two, three, or more hours, when a violent reaction takes place ; and the skin becomes hot and dry ; the face suffused, and there is an increased action of the heart and arteries : and thus in the space of a few hours, continued fever is fully formed. It is when the adynamic fever attacks in the way just described, that organic inflammations are apt to accompany it from the beginning.

OF THE  
**FOUR DEGREES**  
OF THE  
**ADYNAMIC FEVER.**

THE Adynamic Fever, then, being produced in either of the two ways of attack just described, will be found to differ very much in severity: for which reason and for practical purposes it is expedient to divide it into degrees; and these may, with great propriety, be limited to four.

OF THE FIRST DEGREE.

The first degree is mild; the complaints being merely slight head-ache, sometimes, indeed, none at all, some increased heat of skin and action of the heart and arteries.

The appetite is impaired; the tongue is covered with a dirty white coating, except at the end, where it is red, and red points of the prominent papillæ are here seen interspersed, making this

part of the tongue maculated; the surface is moist all over. The cheeks are flushed, and the eyes rather suffused. There is a slight duskiness of the skin, and all the senses are somewhat more dull than natural; and there is great prostration of strength, compared with the other signs. The urine is scanty, and high-coloured; and the bowels are sluggish: there is seldom however delirium, and the patient has refreshing sleep during the night.

## OF THE SECOND DEGREE.

In this degree the pain in the head is considerable; and, although the sight and hearing are less acute than usual, light and noise are disagreeable.

There is a general suffusion and fulness of the face, and a bluish flush upon the cheek. There is considerable action of the heart and arteries: the pulse is frequent, rather full, and rather strong; but it is, nevertheless, compressible by moderate force: its stroke is not very firm, and the artery is open and yielding. This pulse is exceedingly deceptive; the openness results from a want of tonicity; and may be easily mistaken for a great fulness. The character of the tongue is the same as in the first degree, except, that the coating is

thicker and of a more dirty shade. The skin is hot and somewhat tight, but not harsh, nor contracted: there is more or less suffusion on the surface of the whole body, accompanied with the dusky shade. The bowels are disposed to constipation; and the belly often distended with flatus. The urine is high-coloured and scanty. The prostration of strength is great; and the patient lies, at one time, on the side, at another, on the back. Through the day he remains in a quiet, dull, half-sleeping state; through the night he is delirious.

## OF THE THIRD DEGREE.

The third degree is severe.

There is great prostration of strength: the patient lies stretched on his back, breathing slowly and deeply, as one in a lethargic sleep: he is unable to turn on his side, and not only unable, but indisposed to the slightest exertion: the want of power in the muscles of respiration is so great, that he can speak only in interrupted and broken sentences. There are tremors and twitching of the muscles; he trembles when taken out of bed, and cannot stand. There is torpor and dulness of all the senses, so that it is generally necessary to

repeat a question before an answer can be obtained: when roused, he complains of a dull pain in the head, and great thirst.

His face is void of all expression; every feature is relaxed; the skin is dusky; and there is a circumscribed flush on the cheeks, of a hue more purple than red. The eyes are suffused and glassy, with shreds of tenacious matter floating in them, or oozing out at the corners; and the upper eyelids are relaxed and depending. The lips are blue, the teeth dry and shining; and in the corners of the mouth is a viscid mucus, which is drawn out in filaments when the tongue is protruded: this mucus becomes dry, and covers the lips and teeth with blackish sordes. The breath is peculiarly offensive. The tongue is very thickly coated; is brown and dry in the middle, red and dry at the tip, and whitish and moist at the sides.

The pulse is not much accelerated, seldom exceeding 90; and, now and then, is not above the natural standard; it is fullish, sometimes rather firm, but always more or less compressible. The skin is dry and rather harsh: its temperature varies, at one time it is high, at another not much increased. The urine is always scanty and high-coloured, and becomes turbid on cooling. The belly is full, and tender on heavy pressure: the bowels are commonly sluggish,

sometimes relaxed, and the dejections, at this period are dark-coloured and offensive. There is restlessness and constant delirium through the night, with frequent efforts to get out of bed ; and the delirium will sometimes be present through the day.

In a few days, the symptoms undergo a gradual change for the better or for the worse.

If for the better, the prostration of strength, the lethargy, and the dulness of the senses diminish ; the patient quits the supine posture and turns on his side, which must be regarded as a most favourable symptom. There is less viscid mucus about the mouth ; the tongue gets moist, and begins to throw off the thick coating ; spontaneous diarrhoea of ochre-coloured dejections now supervenes, and the belly is no longer full. The stroke and frequency of the pulse become natural ; the skin becomes soft and gently perspiring ; the eyes begin to recover their brightness, the skin its clearness, and the countenance its wonted animation ; and the delirium is changed into sound and refreshing sleep. In this way, amendment gradually goes on ; and in the course of eight, or ten, or more days, the patient becomes convalescent. It is not an uncommon thing, in this degree of fever, for a favourable crisis to be

brought about by a spontaneous hemorrhage from the nose, or by a long deep sleep.

If a fatal change takes place, the delirium is unceasing through the day as well as night; and is attended with continual tossing, with muttering incoherent talk, and sometimes violent and frequent screaming; which subside only as the powers of life fail: then, the lethargy increases, the dusky skin grows purple, the temperature of the body sinks, the extremities grow cold, and the vital functions cease, and close the scene.

If patients, afflicted with this third degree of the adynamic fever, have not the advantage of medical attendance during the early stages, they sink into a state of extreme prostration of strength and insensibility. They lie helpless on the back, with very low muttering delirium and weak respiration. The face is very dusky; the lips purple; and the lips, teeth, and mouth, are loaded with sordes. The belly is highly tympanitic; the excretions involuntary; the sphincter ani entirely relaxed; the dejections very offensive, and resembling black dirty water; and the temperature of the extremities is low.

and the pulse is unsteady, the skin is hot and dry, the tongue is parched, the eyes are half closed, and the patient is drowsy.

#### OF THE FOURTH DEGREE.

The fourth degree is imminently dangerous. Immediately the fever is formed, the symptoms become grave. The patient lies on his back, in a state of nervous agitation, constantly picking the bed-clothes; the countenance is haggard, and the visage sharp; the carotids vibrate; the respiration is quick; and the breath exhales a strong odour peculiar to the adynamic fever. The eyes are suffused, often convulsed, moving from side to side: the upper eyelids depend, and there is a ghastly stare. The mouth is parched; the tongue has a fuliginous coating, dry and hard; and the lips and teeth are covered with black sordes. The skin is hot and dry, tight and harsh; and is frequently spotted with petechiae. The pulse varies from 100 to 120; its stroke is unsteady, is open; but very compressible. The belly is full, and tender on heavy pressure: the bowels are relaxed: the dejections are black and highly offensive; and, together with the urine, are passed in bed without consciousness. The voice is husky, and articulation unintelligible; and emaciation goes on rapidly.

Under these circumstances, the disease runs on frequently to a rapid and fatal termination. If the

patient survives, the recovery is slow, and he is very many weeks before he regains his usual health and strength.

The favourable change is denoted by an improved aspect of countenance ; by an abatement in the violence of the symptoms ; and by the return of tranquil sleep and consciousness. The secretions begin to re-establish themselves ; the tongue to cast off its fuliginous coat ; and now a diarrhoea of ochre-coloured frothy dejections supervenes, and relieves the full belly. The urine gets more abundant, but continues dark for some days, and throws down a copious sediment as it cools : it afterwards assumes a more healthy colour, and deposits the lateritious sediment. The frequency of the pulse diminishes, and its stroke becomes comparatively firm and steady : and in this way, from day to day, the diseased actions cease, the healthy functions are gradually restored, and convalescence is established.

When the secretions are re-established, and the tongue has cast off its fuliginous coat ; the lips and tongue are left red, tender and sore, and, as it were, raw. And this condition extends throughout the mucous lining of the intestinal canal, causing great soreness of the belly, keeping up the diarrhoea, and rendering the stomach and bowels highly sensible to the operation of medicines, or to the presence of undigested food : which makes it important to pay

strict attention to this condition in the treatment of persons recovering from the adynamic fever.

When the disease goes on to a fatal termination, all the symptoms become aggravated. The prostration of strength increases; the patient continues supine, with the body motionless, and the arms stretched at length by either side, or folded across the chest; the visage grows sharper; the face sweaty and cadaverous; the eyes fixed, and the eyelids nearly closed; the lower jaw drops from the relaxation of its muscles; the belly becomes highly tympanitic; the temperature of the skin diminishes; the extremities grow cold; the pulse, rapid, small, and weak, in a short time faltering; and life is gradually extinguished.

Thus, I have described the most common manners of attack and progress of the adynamic fever. There are, nevertheless, other peculiarities which could not properly be embodied in the foregoing description, and which, therefore, it is necessary now to mention.

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**CHAP. II.**

OF  
**SOME PECULIARITIES**  
 WHICH DIFFER FROM THE USUAL COMBINATIONS OF  
**S Y M P T O M S.**

ALTHOUGH the history of the adynamic fever, hitherto given, comprises the combinations of symptoms and of local affections generally met with: yet, the variety of causes, concerned in the production of the phenomena of this fever, and the variable intensity and relation in which these causes stand one to another, together with the important or unimportant rank they, at different times, hold in the long chain of cause and effect, give rise to a variety of peculiar conditions; which can only become familiar by the patient and diligent observance of the sick themselves. The utmost which an author can do is to mark the pro-

minent peculiarities; and these must be regarded as fixed points, or general conditions, to some of which all the minor varieties nearly approach, and may therefore be understood and justly appreciated by comparison.

The peculiar conditions to be mentioned in this place are met with in the milder cases of the adynamic fever; and consist in an unequal derangement of the functions of the different organs: the derangement, in one case, being chiefly in the functions of the brain; in another, in the functions of the abdominal viscera.

Thus, we see, in one patient, pain in the head, delirium at night, suffusion of the face and increased temperature of the skin, with a natural state of belly both as regards the dejections and freedom from flatulent distention. This peculiarity existed in a young man, in whom the accidental cause of a slight attack of adynamic fever was the wearing a wet cap: his cap having fallen into the water, he wrung it, and replaced it upon his head.

In another patient we see a flatulent distended and tender belly, with relaxed, dark, and very offensive dejections, and flushed cheeks; the functions of the brain being in no way disturbed, and the nights passed tranquilly. This peculiarity existed in a boy, in whom a slight attack

of adynamic fever was brought on by continued hard work, to which he was unequal.

In the more aggravated forms of the adynamic fever, there is invariably a co-existing derangement of the functions of the brain and abdominal viscera; there being delirium, tympanitic belly, and so on. These derangements will, in many cases, be equally prominent; in many, however, the derangements of the brain will predominate, and in many will predominate those of the abdominal viscera.

This predominance is distinguished by particular signs.

When it results from the brain, there is incoherent talk, restlessness, jactitation: or, excessive stupor from congestion of the brain; in this case the congestion is evident in the conjunctive membrane; and the patient lies commonly on his side, as if in a profound lethargic sleep, with a snoring and almost stertorous respiration; and the surface of the body is hot.

When it results from the belly, the patient lies on his back, with muttering delirium, less restlessness and no jactitation; and there is greater relaxation of the muscles of the face; and the temperature of the skin is unequal, the extremities being cool, while the belly is parching hot. All these differences indicate and require a difference of treatment.

PECULIAR MANNER OF ATTACK FROM  
MENTAL DISTRESS.

There is a peculiar manner of attack, for example, which will commence in a desponding condition of mind.

The patient loses his usual spirits, and forsakes his usual occupations; he refuses to take food, sits over the fire, or loiters about the house: he is absent, the mind being engaged within itself, and brooding over the subject of its unhappiness. In this state, the patient will remain for several days, complaining only of slight head-ache; but there is always a foreboding anxiety in the countenance. The fever then forms rapidly, the cerebral excitement\* is very great; the delirium is of an active character; and the circumstances of his distress form the only subject of his incoherent talk. He

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\* I am anxious to explain the sense in which the words "cerebral excitement" and "oppression" are used in this Treatise, otherwise they may be supposed to contradict each other. It can be illustrated by the phenomena which result from intoxication, where the brain is excited, and, at the same time, oppressed, by the preternaturally increased circulation of unfit blood through it. Thus we have the extravagant incoherence of intoxication, with blunted perception and diminished muscular power. The brain may, therefore, be excited at the same time that it is oppressed.

### 32 PECULIAR SUDDEN MANNER OF ATTACK.

starts much, and shrieks as if alarmed, and often fancies he hears something. There is continual jactitation, with attempts to get out of bed, rendering it necessary to use forcible confinement. The pulse is much accelerated, is firmer and offers more resistance to the finger, and there is more muscular power also in these, than in other cases; and they form the most pitiable and hideous examples of the adynamic fever.

### PECULIAR SUDDEN MANNER OF ATTACK.

Another peculiar manner of attack is so sudden as sometimes to resemble apoplexy: that is, a person shall be following his usual occupation, or walking along the street, and shall fall down suddenly as in a fit.

These cases have been considered examples of the instantaneous invasion of the adynamic fever; but, by the history of the state of the patients prior to the attack, it will be always found that they have been affected with the precursory symptoms of the adynamic fever for some days; namely, lassitude, languor, daily loss of strength, pain in the head, and loss of appetite. The invasion of these precursory symptoms is frequently so gradual as not to prevent the patients going on with their

usual occupations; they do not feel sufficiently ill to lie by, and hence they persevere in working or walking till their powers are exhausted and they drop or fall down, as in a fit. In one instance, in a healthy young man, this sudden attack was a simple state of exhaustion from walking, and he dropped, or rather let himself down, to the ground. In another young man, whose constitution was impaired by intoxication, there was an alarming congestion of the brain, and he, growing faint while at work, fell down instantaneously and with violence.

This sudden attack will, at one time, be followed by an immediate development of the adynamic fever; at another, the patient will revive after a few hours rest, and several days will elapse before the fever is completely developed.

#### OF THE HEMIPLEGIC PARALYSIS, OR LOSS OF THE USE OF ONE SIDE OF THE BODY, DURING THE COURSE OF THE ADYNAMIC FEVER.

It has occurred to me to see three instances of the loss of the use of one side of the body in cases of the adynamic fever: and, on every occasion, it has taken place gradually after the formation, and during the increase of the fever.

The paralysis affects the whole of the side: the

upper eye-lid is relaxed, the mouth drawn, and the arm and leg are useless: sensation and voluntary motion are equally diminished, but the loss of these is seldom complete, both remaining in a very slight degree. As the patients recover from the adynamic fever so do they regain the use of the side, and here, as in the paralysis from apoplexy, the use of the lower extremity returns quicker than of the upper. The side remains weak for some weeks after the patient has recovered in other respects.

The supervention of the paralysis was gradual in every instance; and, although it occurred in the case of sudden attack resembling apoplexy lately spoken of, it did not immediately follow the fit, for this patient recovered so as to walk home the same evening; the adynamic fever was not developed for several days afterwards, and it was during the increase of this fever that the paralysis occurred.

#### OF THE PECULIAR ADYNAMIC STATE.

There is also a peculiar adynamic state, in which the proper signs of fever are absent, but which, nevertheless, must be treated of under this head, because it has the same origin, and exhibits the distinguishing phenomena of the adynamic fever;

namely, the prostration of the powers of the nervous and muscular systems, together with emaciation.

This comes on with slight but continual headache; coated, dirty, moist tongue, with reddish tip, and prominent papillæ; loss of appetite and strength; but without any shivering, or heat, or duskiness of the skin. The bowels are sluggish; the pulse is small and weak, and does not exceed 80 in the minute; there is no evening exacerbation; the patient sleeps through the night, and is free from delirium, but troubled with dreams.

This state is formed in the most insidious manner, the signs manifesting themselves so gradually, that the patient is at a loss to know what affects him. It will go on increasing for several weeks, till the loss of flesh and strength confine the patient to the house. He is still able to sleep, which sleep, though disturbed by dreams, refreshes him, and he gets up as usual; but about mid-day exhaustion overtakes him, and he is obliged to return to bed. From this he recovers in the afternoon, with an additional loss of strength. This loss of strength will sometimes be much more rapid, and end in the extinction of life without producing fever.

The causes, which produce this adynamic state, are small and repeated losses of blood, bodily and mental fatigue with a low system of diet, and ex-

posure, while hungry and fatigued, to the breath, or to the contaminated air of the chambers of adynamic fever patients.

## OF THE CONGESTIVE STATE.

There is a congestive state also, which, now and then, happens at the beginning, or during the course of the adynamic fever.

In this state, there is great and often dangerous depression of the vital powers; so that, instead of hot skin and accelerated pulse, the temperature of the surface is below the natural standard, and the pulse slow and feeble. The skin of the whole body is very dusky, and the hands, feet, and lips, of a leaden hue; all evidently arising from a congestion of the venous system, the result of feeble and slow circulation.

This congestive state is an aggravation or increase of the languor and debility which usually precede the development of the adynamic fever; and so much does it depress the vital functions as sometimes to threaten the extinction of life, and always to delay, for a longer or shorter time, that re-action which constitutes the attack of the adynamic fever.

The congestive state, which sometimes hap-

pens during the course of the adynamic fever, is a similar depression of the vital functions, but occasioned, in the instances which I have seen, by exhaustion from the fatigue of removing the patient from his home to a hospital.

Now to this state has been given the term, congestive fever, but this is a nosological solecism, for that condition cannot be called fever, in which the signs of fever do not exist; and there is here neither heat of skin, nor accelerated pulse, both which are necessary to constitute fever. The appellation is not consistent with the condition specified, and, therefore, is not correct. Congestive fever is even made one of the varieties of typhus, and it is contended, moreover, that this state will exist from the commencement, and prove fatal in a few days, no re-action taking place. For myself, I have never witnessed such a fatal progress of things, nor have any of those friends with whom I have conversed on this subject. Such cases consequently must be very rare.

If, during the state of congestion, when the powers of life are at a low ebb, and which often precedes the development of the adynamic fever, a practitioner has the indiscretion to abstract blood, then, indeed, there will be a fatal termination without re-action: but that fatal effect, which has

been produced by art, must not be looked upon as the usual or natural course of the disease.

Similar lamentable cases, I regret to say, have come within my own knowledge, and I fear there is scarcely any one, who has lent an ear to the seductive statements of the benefits arising from blood-letting in the adynamic fever, that has not sent many a patient prematurely to the grave, and had reason to lament those untenable assertions which had so worked upon his own credulity.

In hot climates, where the causes of disease are more intense, and in this country, in former years, when the fever bore a more malignant character, I can readily believe that the body may be so affected, and the powers of the nervous system so overwhelmed, as to bring about such a state of congestion, at the outset of the disease, as may prevent the possibility of re-action, and so prove fatal. Sydenham mentions this particularly in his account of the plague which ravaged the metropolis.

A congestive condition, therefore, may occur at the onset, or during the course of the adynamic fever, but cannot, with any propriety, be considered a variety.

I have been induced to make these remarks,

because we cannot be too circumspect in admitting titles which belie the state they are meant to represent, or in allowing too much latitude to recognised terms: for, by extending the term fever to states in which there is no increased heat of skin, we cease to have any precise notions of that term, and this, added to the natural inaccuracy and insufficiency of language, plunges medical science at once into the deepest confusion, and supplies ample means to support the dogmatism of obstinate prejudice, and the sophistical absurdities of some favourite doctrine. To this I shall have occasion to revert hereafter.

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**CHAP. III.**

OF

**THE ADYNAMIC FEVER,**

ACCOMPANIED WITH.

**LOCAL INFLAMMATION.**

LOCAL inflammation may accompany the adynamic fever from the commencement; or, it may supervene at any period during the course of the fever, or even during convalescence.

When inflammation accompanies this fever from the commencement, it is very generally in those cases in which the way of attack was through the intervention of an accidental cause: thus, if a person, who has been subjected to the influence of the primary cause, a contaminated atmosphere, and so has a condition of body predisposed to the adynamic fever, catches a violent cold, this character of fever is immediately developed, and, together with it, pneumonia, bronchitis, or some other organic inflammation.

But, where the adynamic fever is produced by the primary cause alone, that is, where it arises from the condition of the body without the concurrence of an accidental cause, as cold, it is very rarely, indeed, attended with local inflammation.

When inflammation supervenes during the course of the adynamic fever, the time of its accession is in no way certain. It may come on at any period from the commencement to the termination of the fever, and is brought about, in most instances, by the currents of air which arise from free ventilation; and hence the pulmonary catarrh, or sub-acute bronchitis, which so frequently makes its invasion after patients are admitted into the hospital.

At whatever time, or in whatever way the inflammation may arise, it is modified by the adynamic fever; for the prostrate condition of the nervous and muscular systems, which has been described as pathognomonic of this fever, prevents the inflammation going on with full force; it gives to the inflammation a character which is known by the term, atonic; and the inflammation partakes of this character, more or less, according to the degree of the adynamic fever, the adynamic state having a direct tendency to depress the

violence of the inflammation. Hence the great difference between inflammation accompanied with the inflammatory fever, and inflammation accompanied by the adynamic fever: and this difference depends immediately on the nervous system; which fact has been too much overlooked, seeing that it forms the distinguishing feature, and affords a landmark to direct a rational and successful treatment.

The atonic character of inflammation accompanying the adynamic fever is, moreover, shewn in the products of that inflammation, all of which are nearly destitute of fibrine, the characteristic of tonic or healthy inflammation.

Where the serous membranes are the seat of inflammation, the effusion, instead of being fibrine, is sero-purulent, with merely shreds or flakes of albumen floating in it; so that there are either no adhesions between these membranes, or the adhesions are partial and slight.

Where the mucous membranes are the seat, the product is merely mucus, and seldom or never mucus combined with pus.

Where the inflammation is in the parenchyma of any organ, as of the lungs, constituting pneumonia typhodes, the consolidation is in a degree trifling compared with ordinary cases of pneumonic inflammation.

The state of the blood, drawn under the above circumstances, contributes, also, to shew how inflammation is modified by the adynamic fever; for it is frequently neither buffed nor cupped, sometimes only buffed and cupped in a slight, and never in a great degree; and the coagulum is more loose than firm.

Further evidence of inflammation being modified, or depressed, or kept down by the adynamic fever, may be drawn from what is observed to occur on the removal of a patient from his filthy, ill-ventilated habitation, to the open wards of an hospital: when it is no uncommon thing to see the state of that patient, in whom, in his own habitation, the powers of life were low and indicating the use of cordials, become so altered after the removal, as to have a vigorous circulation and signs of inflammation, which call for the abstraction of blood. Here was an inflammatory disposition stifled and kept down by the adynamic state, which adynamic state being lessened, the inflammation broke forth.

The degree of local inflammation is by no means necessarily commensurate with the degree of the adynamic fever. The degree of inflammation may be violent, while the degree of the adynamic character of the fever is slight; or, the

degree of inflammation may be slight, while the degree of the adynamic character of the fever is severe: or, the degree of the inflammation and of the adynamic fever may be simultaneously slight. Thus, the adynamic fever of the first degree may be attended with a severe pneumonia, or the adynamic fever of the third degree may be attended with a slight pneumonia.

This inflammation is accidental; it does not grow out of the adynamic fever, but merely accompanies it; and, therefore, it and the fever are, to a certain extent, independent of each other. The inflammation may be subdued early, and the adynamic fever continue its course nevertheless; or the adynamic fever may be subdued, and the inflammation continue: thus, in cases of the adynamic fever accompanied with rheumatic inflammation, that inflammation will often be very much suppressed during the urgency of the adynamic fever, and revive as the adynamic fever subsides.

In addition to the local inflammations, which occur accidentally during the course of the adynamic fever, there are local determinations and sub-acute inflammations, which result,

Directly, from causes dependent on the fever itself; as the sub-acute inflammation of the muciparous glands and sub-mucous tissue of the

intestinal canal; excited by the irritation of putrid fæces; and which will be considered at length under "The Morbid Appearances in the Intestines:"

From a weakened state of the vessels of any part or organ, produced by former inflammation:

From a predisposed condition of an organ; as of the brain, when it has been under the influence of violent emotions or passions of the mind.

The state of the brain under these last circumstances deserves consideration; for the signs might lead one, at first, to conclude that this organ is affected with a high degree of inflammation. These signs have been described under "The Peculiar Manner of Attack from Mental Distress;" and, although they exhibit a greater strength of the muscular and vascular systems, with more noisy delirium, than in other cases of the adynamic fever; these must not be attributed wholly to inflammation: they depend, in part, on the excited and disturbed functions of the brain and nervous system from the moral causes above-mentioned. And this is the reason why, in dissections, we invariably find the morbid changes in the brain do not accord with the violence of the symptoms, they are much less in proportion, and always disappoint our expectation.

Hence it is, that a mixed treatment, of moderate depletion to assuage the inordinate actions of the sanguiferous system, and of sedatives to allay the disturbed functions of the brain, is far more successful than merely anti-inflammatory measures.

When the adynamic fever affects persons who had any prior organic lesion, the functions of these organs will be unusually embarrassed during the course of the fever. This fact is mentioned by Celsus in his usual elegant style,—“Et quoties offensum corpus est vitiosa pars maxime sentit,” and cannot be too deeply impressed on the mind of the physician; for should this embarrassment be mistaken for the result of present inflammation, instead of former disease, the consequences must always be serious and frequently fatal. These remarks are best illustrated by lesion of those organs, the functions of which are most cognizable to our senses, as the lungs and heart.

The lesion of an organ is necessarily attended by an imperfect performance of its functions; thus, consolidation of the lungs obstructs the free transmission of blood through them, which embarrasses more or less the respiration; yet the person shall in other respects, be in good health, the consolidation being the effect of inflammation at some former period. Now, if this person

is affected with any complaint which disturbs the circulation, as, with the adynamic fever, the respiration will be much more embarrassed; it will grow quick and short, there will be a suffocating cough, blueness of the lips and face with prominent eyes; all which symptoms are derived from the mechanical obstruction to the transmission of blood through the lungs, and must not, therefore, be construed into an indication of inflammation. Should such a constriction unhappily be put upon them, and active depletion be had recourse to, it will inevitably endanger, if not destroy the patient's life: for, where disease has left impediments in the way of any function, nature requires all the powers of health to counteract them; and, if these impediments are increased, and the powers of life diminished, the consequence must be destructive.

This is the reason why patients, who have organic lesion from former disease, never bear depletion so well as those whose organs are sound, be the present disease what it may: and, if the present disease is the adynamic fever, which is characterized by prostration of strength, they bear depletion less well than under other circumstances; and should the disease be protracted, as it frequently is, the patient generally sinks under it.

In fewer words, persons of unsound body are ill adapted to combat disease, or to support depletion.

It has been already said that the adynamic fever is characterized by prostration of strength; and hence, the vehement actions of a phlegmonous inflammation cannot occur in the severer cases of this fever, where the prostration is very great. Yet, it must be remembered, that in acute inflammation, accompanying the adynamic fever, (that is acute adynamic or atonic inflammation), though the actions are less vehement, they are not less dangerous; because, inflammatory actions, taking place in conditions of the body in which the powers are weak, soon destroy. A familiar example is seen in the epidemic puerperal peritonitis, which is an atonic inflammation accompanied with the adynamic fever.

Seeing that prostration of strength is the invariable and chief feature of the adynamic fever, that its degree is always in a direct ratio with the degree of the fever, and that it increases as the fever is protracted, it here becomes a matter of the first consequence to judge accurately of the existence of inflammation, and of its relative importance; for, if under an erroneous notion of inflammation,

blood is abstracted, even to the extent of a few ounces only, it will sometimes be followed by an exhaustion, from which the patient will never rally. I allude here, more particularly, to the tense and tender state of the belly so generally met with in the adynamic fever, especially in protracted and urgent cases; and, for the relief of which, cupping, or leeches are frequently employed at a very late period, under the impression that it arises from inflammation. This subject will be further discussed when speaking of the treatment of the tympanitic belly.

#### OF LOCAL INFLAMMATION AFTER THE DECLINE OF THE ADYNAMIC FEVER.

Local inflammation is of frequent occurrence after the decline of the adynamic fever, when convalescence is approaching; and it attacks those patients, especially, who had rheumatism combined with the fever.

The inflammation is excited, in almost every instance, by taking cold; and frequently attacks a serous membrane, as the pleura, or peritoneum. In one case, it attacked the lining membrane of the left side of the heart, and destroyed the patient in less than thirty hours.

Inflammation, occurring at this period, has nothing peculiar in its character, further, than that it occurs in a body in which there is debility from wasting of the physical powers by an adynamic fever. It is, therefore, an ordinary inflammation attended by the symptomatic inflammatory fever.

There is no return of prostration of the powers of the nervous and muscular systems; the powers of these systems being in direct proportion to the emaciation, and not in a greater proportion, as in the adynamic fever.

The degree and activity of this inflammation will, therefore, be relative to the intensity of the exciting cause, and to the existing state of the physical powers of the patient; and must be treated accordingly.

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**CHAP. IV.****OF THE PULSE.**

THE ancient physicians derived so little assistance from the pulse, that Celsus, the faithful and elegant recorder of their opinions, held it to be a “res fallacissima ;” and physicians, since his time, have so frequently concurred in this opinion, that it has been almost admitted a maxim in the science of medicine.

From this opinion I must wholly depart. First, because I cannot believe that the indications of a system, so important in the animal economy as is the sanguiferous, are deceptive ; but rather, that we are deceived by our own inaccurate observance of these indications. Next, because we are so little agreed on the various states of the pulse, that two physicians will seldom give a corresponding description of any given state. Thirdly, because the set of terms, usually employed in describing the pulse, is inadequate to

express its various states.\* And, lastly, because my own experience is so opposed to the opinion of Celsus, that I look upon the pulse as one of the best and most certain indications, (taken singly) of the nature and treatment of disease.

Although I have presumed to say thus much on the certainty in the indications of the pulse, it would be incompatible with the purpose of this work to consider these indications further than as they are connected with the adynamic fever: and my observations must at the present, therefore, be limited accordingly.

The prostration of the powers of the muscular system affects the heart in common with the other muscles of the body: for which reason, the stroke of the pulse is never firm in pronounced cases of the adynamic fever.

The arteries are involved, also, in the general prostration of power; their tonicity is thereby diminished, and they yield readily to the impulse of the heart. This diminished tonicity disables,

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\* The poverty of medical language is here conspicuous; but the advancement of science will soon remedy the defect. An excellent model of terms, the terms appropriate to respiration, has been given to the medical public, by the late justly celebrated Laennec; and which are very well set forth in Stokes' useful little work on *Mediate Auscultation*.

more or less, the arteries from contracting on the contained blood; and thus the circulation is deprived of that great aid \* which results from the pressure of these vessels, when their tonicity is unimpaired.

In addition to this diminished power of the heart and arteries, the veins are deprived of the usual assistance from the contractions of the voluntary muscles; adynamic fever patients lying, for the most part, with these muscles motionless.

Then the respiration, weak from the prostrate powers of the respiratory muscles, no longer affords the natural aid to the transmission of the blood from the right to the left side of the heart, and the left ventricle is not freely supplied.

This diminution in the powers of the sanguiferous system, diminishes the velocity of the blood; which is not made up by the accelerated action of the heart, this organ no longer retaining its natural vigour; and the left ventricle not receiving a free supply of blood, but little can

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\* I cannot think that physiologists estimate sufficiently this power in the circulation of the blood. The great arteries, like elastic tubes, when distended, exert a continual and immense pressure on their contents: a fact witnessed by Dr. Barry, in his experiments on the horse, in which he found the aorta so hard, from continual distention of blood, as to resemble the piston of a steam engine.

be sent forward at each contraction. Hence, although the action of the heart is accelerated, the circulation of the blood is slow.

The combined influence of these causes, produces the peculiarities of the pulse in the adynamic fever ; which I will now endeavour to describe.

The pulse is never full and strong, and is not firm. The pulse is open and rather large ; its stroke is quick and short, and falls back sensibly, the artery retreating from the finger, and leaving but a slight and transient impression, so that the impression from one impulse is gone before a second arrives ; and hence, notwithstanding the pulse is accelerated, there is an entire interval between the strokes. It is always compressible, and commonly very much so.

These phenomena will be explained by recurring to the preceding remarks on the sanguiferous system generally.

The pulse is not strong, because the heart does not retain its energy : and, for the same reason, it is not firm. It is not full, because little blood is sent forward at each contraction of the left ventricle.

The pulse is open, and rather large, from the

want of tonicity in the artery ; on which account it is very dilatable, and yields readily to the impulse of the heart, although this impulse is not strong.

The short and transient stroke is, also, from the want of strength in the pulse, and from the small quantity of blood propelled into the artery. And this small quantity of blood, being insufficient to keep the artery well distended, the vessel retires from the finger, and gives the sensation of the pulse falling back. This sensation of falling back is strikingly exemplified in the pulse, after sudden haemorrhage, when the action of the heart is quick, and very little blood sent into the aorta at each contraction.

The pulse is always compressible, for the same reasons which render its stroke short and transient.

I beg to draw the attention of the reader to that character of the pulse, described by the epithet "open," as it is frequently mistaken for a full pulse, and blood abstracted accordingly, to the injury of the patient.

The open pulse is a dilatation of the artery from want of tonicity, whence it is dilated by a weak stroke of the heart, propelling only a small quantity of blood.—The full pulse is a dilatation

of the artery ; not from want of tonicity, its tonicity being unimpaired ; but from an increased energy in the heart, propelling a larger volume of blood.

The open pulse being a state of dilatation of the artery, and the full pulse being a state of dilatation also, the pulse, in either instance, is necessarily large ; and it is this common character which is deceptive. But then, the open pulse is compressible ; the stroke is weak, leaving no impression on the finger ; and the pulse falls back ; whereas, the full pulse is not compressible ; the stroke is firm, leaves an impression upon the finger ; and does not fall back.

Such is the general character of the pulse in the adynamic fever ; but, this character exists, in a greater or less degree, according to the period and degree of the fever : wherefore, in the early stage, this character will be less pronounced, than when the fever is more advanced. And the same will be the case, when the attack is sudden, as through the intervention of an accidental cause, and, therefore, before the powers have been much exhausted. So, also, in the mild cases of the adynamic fever, this character will be less pronounced, because the powers of the body are less depressed.

In the adynamic fever, accompanied with local

inflammation, the pulse retains the same character, although in a greater or less degree, according to the circumstances just described.

This character is modified, in part, by the state of the skin; as when the skin is dry, and contracted, the pulse is less open than when it is moist and relaxed.

In athletic men, following a laborious trade, in which the work falls upon the arms, as blacksmiths, the artery is unusually thick, and the stroke of the heart has an habitual energy; and when these persons labour under the adynamic fever, the pulse will retain this habitual character in a less degree, notwithstanding the depression of the powers of the system. Allowance, therefore, must be made accordingly; but the relative strength may be judged of, by the shortness of the stroke, by the pulse falling back, and by its compressibility.

The pulse, in the congestive state, is small and weak.

There is a very peculiar character of the pulse which exists, in particular cases, just after the decline of the fever and before convalescence, and occurs in patients who have been very much

exhausted, either by great privation of the comforts and necessaries of life prior to the attack of fever, or by the loss of much blood during the course of the fever.

This pulse varies from 70 to 90 in the minute; it is open, the stroke quick, rather sharp, very short, vacillates, and falls back; and the interval between the strokes is long, comparatively, and complete.

This character of pulse, occurring after the decline of the adynamic fever, arises from the very weak condition in which the physical powers are left, from the want of tonic contraction of the arteries, and from the small quantity of blood in the system.

Patients having this character of pulse recover exceedingly slowly, and have always a protracted convalescence.

This pulse is precisely of the same character as the pulse after severe haemorrhage: which, also, is produced by the same causes; namely, a small quantity of blood in the system, and a weak state of the physical powers, together with a want of tonic contractility in the arteries to adapt themselves to the diminished volume of the blood.

I have said that the pulse, taken singly, is one of the best and most certain indications: and, in

confirmation of this, I affirm, that, when other signs appear to indicate the abstraction of blood, this abstraction cannot be determined on without the assistance of the pulse, nor, without it, can we determine the quantity. The propriety of abstracting blood, and the quantity to be abstracted, must be regulated by the relative energy of the pulse; or, otherwise, the propriety and the quantity will be a matter more of chance than of certainty. I speak confidently on this point, from having seen the worst effects result from the abstraction of blood, which appeared to be indicated by the other symptoms, while it was contra-indicated by the pulse.

#### OF THE TONGUE.

The general appearance of the tongue has been already described in the degrees of the adynamic fever.

Its peculiar and invariable characters are the dirty coating, the red edges and point, and the prominent papillæ. The coating varies in thickness, and in colour from a light dirty shade to a deep black, the shade being deeper, and the coating thicker, as the fever is more severe.

In mild cases, the tongue is moist; but, in all the severer cases, it is dry, and frequently parched.

In mild cases, as soon as the fever is on the decline, the redness of the edges and point diminishes, the papillæ subside, the coating separates, and is thrown off in two or three days, leaving the tongue nearly of its natural appearance.

In the severer cases, as the fever abates, the dry tongue grows moist, first, at the edges, then, at the point, and the thick dark or black coating peels off gradually from the sides towards the middle, leaving the tongue smooth, moist, and of a raw red, and extremely tender, sensible and sore.

In some instances, instead of being left moist, the middle will be dry and shining, as if polished, and, although preternaturally clean, will not grow moist all over for several days.

These different states of the tongue correspond with the different states of the intestinal canal.

Where the tongue is moist, the coating of a light shade and not thick, and the redness of the edges and point not deep, the belly is in a natural state, and so it remains when this tongue becomes clean and of a natural appearance.

Where the tongue is dry or parched, the coating dark or black, and the edges and point of a deep red, the belly is flatulent or tympanitic, and tender, in a corresponding degree: the bowels

are relaxed, and the dejections dark or black, and highly offensive, constituting the "Dark or Black offensive Diarrhoea," to be spoken of hereafter.

When the tongue has cleaned, and is left smooth, moist, of a raw red, and tender, sensible and sore, this state is accompanied with subsidence of the tympanitic belly, and with relaxed bowels; but the dejections are now ochre-coloured, and much less offensive, constituting the "Ochre-coloured Diarrhoea," to be spoken of hereafter.

In those instances where, at the decline of the fever, the tongue is left preternaturally clean, but, instead of being moist, is dry and shining in the middle and at the point, as if polished; the belly remains tympanitic, more or less; and, although the diarrhoea is ochre-coloured, the dejections continue highly offensive, which will be explained when the "ochre-coloured diarrhoea" is considered. This state of the tongue has embarrassed me very much; and it is only very lately that I have been able to satisfy myself of the state of the belly, with which I have every reason to believe it is combined, as above described.

When the adynamic fever is combined with rheumatism, the character of the tongue is modified, and the foul surface is made up of a

mixture of the dirty coating peculiar to the adynamic fever, and of the white fur peculiar to rheumatism; and, when it becomes clean, the surface will be whiter, and the substance paler, than when rheumatism has not existed.

Some patients have a habit of squeezing up the body of the tongue and curling the point when it is protruded, which, in some conditions, alters its character very much: as where, after the thick coat is cast off, the tongue is of a deep raw red, this squeezing up will make it appear pale in the middle and at the point. This is produced by a contraction of the lingualess muscles, by which the body of the tongue is compressed and the blood squeezed out of it. By desiring the patient not to squeeze up his tongue, these muscles will be relaxed, when the tongue will present the ordinary flat extended surface we generally see.

It is scarcely necessary to observe, that the lingualess muscles do not assist in the protrusion of the tongue, that being effected by the genio-glossus, and, therefore, the protrusion of the tongue does not necessarily produce a contraction of its body.

## OF THE TYMPANITIC, OR FLATULENT DISTENDED BELLY.

The muscular tunic of the intestinal canal is involved in the same general prostration of power, which is so conspicuous in the voluntary muscles; and hence, those parts of the canal, which have to act against gravity, cannot disburthen themselves of their contents. In these parts lodge the faeces and vitiated secretions, which are soon decomposed and evolve a gaseous fluid, which distends the intestines, and produces the flatulent distended or tympanitic belly.

This tympanitic state does not occur in some mild cases of the adynamic fever, where the tongue is moist, and the prostration of strength inconsiderable; because the muscular tunic retains sufficient power to carry forward the contents of the intestines, and so to prevent decomposition and the abundant evolution of gas.

But whenever the prostration of strength is great, however early in the disease this may be, the flatulent distention supervenes, and the tongue and teeth become dry, and sordes collect about the mouth; and, if the distention is very urgent,

it opposes the descent of the diaphragm, and renders the respiration short.

The distended belly is tender and painful on pressure, particularly across the præcordia, but there is no pain complained of unless pressure is applied.

This pain on pressure arises from the soreness of the bowels caused by distention, just as soreness of the distended bladder will give rise to pain on pressure above the pubes. The pain on pressure, therefore, must not be construed as arising from inflammation, for it is more urgent as the tympanitic distention is greater; and the greater the prostration of the vital powers, the greater is the distention, and the greater the pain on pressure: and, therefore, any error as to the cause of this pain, at this time, would be the more disastrous.

“The dark or black offensive diarrhoea” generally accompanies this tympanitic state of the belly in severe cases, and, notwithstanding the bowels are thus relaxed, liquid fæces lodge in the parts above described.

In cases of tympanitic belly where the prostration of strength is not very great, the bowels, instead of being affected by a diarrhoea, will be

sluggish, or relaxed once or twice only in twenty-four hours; when the dejections may be brown, dark, or black, but they are always highly offensive.

As the fever abates and the prostration of strength diminishes, and the "ochre-coloured diarrhoea" is established, the tympanitic belly subsides: except, in cases of extreme prostration of strength, or, where the tympanitic distention has been so great as to strain the muscular fibres of the intestines, and disable them from contracting; just as the muscular fibres of the bladder are strained and disabled by retention of urine. Under these circumstances, the tympanitic belly does not subside for some days longer; and, as long as the belly remains tympanitic, the dejections continue highly offensive, although they are ochre-coloured.

In the sudden attack of the adynamic fever after a meal, which resembles the invasion of eruptive diseases as described at page 16, the flatulent distention of the belly will take place in a few hours; by which rapid distention, the muscular fibres of the intestinal canal are so strained, as to render the belly painful, particularly at the upper part, and unusually painful and tender on pressure, giving, altogether, the

idea of peritoneal inflammation. But there is, here, no anxiety of countenance, for the features are relaxed, and the expression vacant; nor is there any drawing up of the limbs, as in peritonitis; and, in the first stage of peritonitis, the belly, although full, is not tense, but doughy, and rather solid to the feel; whereas, here, it is tense and elastic from flatulent distention. If blood is drawn, too, in these cases of the adynamic fever, it does not exhibit the slightest signs of inflammation, and is followed by little comparative relief.

This sudden attack after a meal arrests the progress of digestion, and the undigested matter, which has not been thrown up by vomiting, quickly ferments, and disengages the gas by which the rapid distention is produced.

In the tympanitic distention of the belly, the greater tenderness and pain on pressure in the epigastric region deserves remark: and I can only account for it, by this part being immediately over the semi-lunar ganglion and solar plexus of nerves, the great centre of sensation and of the ganglionic system in the abdomen; which, it is not unreasonable to suppose, is affected and irritated by the general derangement of the functions of the abdominal viscera.

### OF THE DIARRHŒA.

There are two kinds of diarrhœa which supervene in the adynamic fever: they are, the black offensive diarrhœa, and the ochre-coloured diarrhœa.

The black offensive diarrhœa occurs while the fever is urgent, and the ochre-coloured diarrhœa at the decline of the fever.

### OF THE BLACK OFFENSIVE DIARRHŒA.

Like the tympanitic belly, this diarrhœa takes place in the severer cases, and during the urgency of the adynamic fever, where the prostration of strength is very great. It supervenes after the tympanitic belly has been present two or three days; and the tympanites and the diarrhœa then co-exist, and continue together.

The dejections are black, thin, and highly offensive; giving out, at times, the odour of putrid animal matter. They are, for the most part, passed in bed without consciousness; for sensation is so blunted by the depressed powers of the nervous system, that the rectum no longer perceives

the presence of feculent matter, and, the relaxed sphincter offering no resistance, the dejections run off involuntarily.

Attending this diarrhœa, the tongue is coated, dry, very brown or black, and sordes are collected about the teeth and corners of the mouth: the cheeks are flushed; the skin is dry and harsh; the pulse is frequent and open; the urine, when it can be caught, is dark-coloured, but clear; there is delirium; and, in short, all the signs of a severe adynamic fever; and the belly remains tympanitic during the whole period of this diarrhœa.

The decomposed feculent matter and vitiated secretions, which, by the evolution of gas, caused the tympanites, irritate the intestinal canal, and bring on the black offensive diarrhœa: and the powers of the muscular tunic being depressed in common with the whole muscular system, and opposed, moreover, by the flatulent distention, the action of the canal, though excited by irritation, is incomplete and insufficient: the gaseous and other contents of the intestines are, therefore, only partially expelled, and the vitiated liquid faeces still lodge in the depending portions of the canal, and keep up the irritation and the diarrhœa.

If this state of things is not relieved, the diarrhœa and accompanying symptoms will con-

tinue, aggravating one another, and exhausting the patient, day by day, till he sinks into the grave.

If the bowels can be relieved of their vitiated contents, the accompanying symptoms will be mitigated, the powers of the system will rally, the secretions will return, and the black offensive dejections will be replaced by dejections of an ochre colour; constituting the "ochre-coloured diarrhœa."

In less aggravated cases, the dejections, instead of being black, will be dark, or of a dirty red; but they are invariably offensive.

#### OF THE OCHRE-COLOURED DIARRHŒA.

The period of the supervention of the ochre-coloured diarrhœa is at the decline of the fever, and at the re-establishment of the secretions; and it, very generally, succeeds the black offensive diarrhœa.

As soon as the urgent signs become mitigated, the depressed powers of the nervous and muscular systems rally, the secretions re-establish themselves, the tongue begins to throw off its dirty, thick coating, and becomes exceedingly tender, sensible, and sore; after which, it is left red, and,

as it were, raw; so that, any thing sharp or stimulating, taken into the mouth, gives pain.

This process would seem to extend along the alimentary canal, rendering it tender and susceptible throughout its whole tract; and, laxative medicines, which, a few days before, operated beneficially, now irritate, gripe, and purge violently.

This susceptible state of the canal renders it impatient of its contents; it hastens to discharge them, and, the muscular tunic, having somewhat recovered its powers, the intestines are able to contract efficiently; the flatus and putrid fæces are expelled, the tympanitic distention and tenderness of the belly subside, and the dejections, consisting now of the abundant re-established secretions, are no longer black, but ochre-coloured: the recovered functions of the nervous and muscular systems restore sensibility to the rectum and contraction to the sphincter, so that the dejections are passed with consciousness. The ochre-coloured diarrhœa, therefore, is not involuntary.

This diarrhœa is not, on all occasions, immediately attended by an entire subsidence of the tympanitic belly; as, in cases of extreme prostration of strength, or straining of the muscular fibres of the intestines, which has been mentioned under the section "tympanitic belly;" and, under

these circumstances, the dejections continue to be very offensive, although ochre-coloured: whereas, the ochre-coloured dejections, generally, are nearly free from offensive odour.

If this diarrhœa is left to itself, it gradually abates as the susceptibility of the intestines diminishes: and, as the patient gains strength, the bile becomes of a deeper colour, and the dejections assume their natural complexion and consistence.

#### OF THE RETENTION OF THE URINE.

The depressed powers of the nervous and muscular systems, interfere, very frequently, with the regular and efficient discharge of the urine from the bladder.

The more usual consequence is an incontinence, owing to the weakness and necessary relaxation of all the muscles about the neck of the bladder, in common with the other muscles of the body. By this relaxation, the urine, instead of being retained in the bladder for the usual period, is allowed to pass on through the urethra, and drip away involuntarily. This incontinence, not being the overflowing of a distended bladder, is, of itself, of little moment, further than as a

source of uncleanness, and of excoriation, and as an indication of an alarming prostration of the powers of life. This is the more general state of the bladder.

But it will happen, that the bladder retaining the urine, as in a state of health, and, at a proper degree of distention, giving the usual admonition for evacuation, the call of nature will be but slightly perceived, on account of the blunted state of perception of the nervous system; and the muscular incapability of the patient to assist himself, will, at times, compel him to allow the admonition to pass unobeyed. The secretion of urine continuing, the bladder is distended more and more, and the pain and stimulus from this greater distention, will, sometimes, rouse the patient to repeated efforts of micturition, which, proving fruitless, are soon discontinued, and retention of urine and its consequences take place.

There would be little difficulty, or attendant danger, was the patient able to direct the attention of the physician to his local distress; but, this, he is rendered incapable of, by his general insensibility, and confused perceptions. The distention of the bladder, therefore, goes on, and with it, distention of the ureters, infundibula, and pelvis of the kidneys. The great pressure of this distention resists the distillation of the

urine from the mammary processes and uriniferous tubules : the secretion itself is, also, thereby diminished ; and then supervene the phenomena and effects of suppression of urine ; namely, effusion into the ventricles of the brain, with its concomitant signs.

The secretion of urine being only diminished, not altogether suppressed, the bladder would inevitably burst, was it not that the pressure eventually overcomes the resistance of the sphincter, and the urine drips away, forming, also, incontinence. Yet, notwithstanding this overflowing, the bladder is only secured from bursting, for the great distention and pressure continue, and oppose the secretion of urine, and, thereby, encourage and augment the ventricular effusion.

It is unnecessary to say, that these consequences are fatal.

The insensibility of patients, severely afflicted with the adynamic fever, should make the physician ever on the alert respecting the state of the bladder. He must not depend on the reports of the attendants, but inspect for himself, the quantity of urine passed : and, where there is incontinence, he should satisfy himself, by examination above the pubes, whether it is the overflowing of a distended bladder, or the effect

of muscular relaxation. If the urine is very scanty, and there is neither incontinence nor retention, he should jealously watch the condition of the brain ; and, by being alive to the first signs which threaten effusion into the ventricles, should be prepared to combat and counteract them as they appear.

Although the lifelessness, as it were, of adynamic fever patients, under these circumstances, deprives the physician of the usual assistance of a clear detail of their sufferings ; a retention of urine, will, nevertheless, develop signs which cannot but attract notice.

There will, for instance, be a great, and unexpected change in the patient's state generally ; the circulation will be much and suddenly excited ; he will moan distressingly ; the delirium will be aggravated ; and, if roused and questioned, he will complain of all kinds of violent noises in the head, as, slamming of doors, and so on. The knees will be drawn up to the belly ; and, if he is moved, he will cry out violently, although, before, he was indifferent to any change of position.

For the manner in which the bladder is to be emptied, see, "the Treatment of the Retention of the Urine."

## OF THE CONDITION OF THE BLOOD.

My remarks on the condition of the blood will be confined to its physical characters ; because, it is from the evidence of these characters, that the practical physician must form his judgment ; and because, animal chemistry has not yet attained a degree of certainty, from which the science, or the practice of medicine can derive much aid.

The blood, like the fever itself, has, uniformly, certain prominent characters, which vary in a degree, corresponding with the degree of prostration of the powers of the nervous and muscular systems.

These characters differ from the standard characters of the blood in health, inasmuch as, the blood is blacker ; coagulates more slowly ; and, the coagulum is less firm.

If the adynamic fever is accompanied with local inflammation, the blood will be cupped and buffed ; but the buffy coat will be paler, less tough, and not so thick as in the same degree of inflammation under ordinary circumstances ; nor does the fibrine possess the same contractile power ; whence, the cupped state is

not decided, the coagulum itself being large, and generally adherent, on one side, to the vessel, and the surface extended, and almost flat, instead of being concave with the edge inverted.

The inflammatory signs of the blood, will always be manifested, in a degree according with the degree of the adynamic character of the fever, and of the inflammation.

If the adynamic character of the fever is slight, and the inflammation violent, the blood will be much more buffed and cupped than when the adynamic character of the fever is severe.

The degree of the cupping, and of the buffy coat of the blood, will be very much determined, by the vessel in which it is caught; so that the same blood, which, in the common broad pewter vessel, will scarcely exhibit the cupped surface and buffy coat, will, in a tea-cup or wine-glass, be cupped and buffed decidedly. This difference, depending on the shape of the vessel, should be cautiously admitted as evidence of inflammatory action. To form an accurate and impartial judgment of the indications of the blood, it should be drawn into vessels of a similar form, and of a size proportioned to the quantity abstracted.

If blood is abstracted from adynamic fever patients, by cupping, it frequently does not co-

agulate in the glasses, however long they remain on; while, in other patients, it coagulates almost invariably. The blood, too, is obtained with difficulty: it occupies as much time to cup one fever patient, as to cup two or three others.

OF THE CONDITION OF THE BLOOD AFTER  
DEATH.

In the dissection of those who die during the urgency of the adynamic fever, the blood is found to be fluid, and very black; and it is not a very unfrequent occurrence, to find black blood, sometimes fluid, sometimes coagulated, in the arteries.

It is difficult to account for the above conditions of the blood, in adynamic fever patients, during life, and after death, except, by attributing them to a diminished vitality of that fluid. Indeed, the state of the blood, always accords with the state of the patient, and the lifelessness of the one, with the lifelessness of the other.

The blackness of the blood is explained by

the weakness of the respiration, which does not effect the natural changes of that fluid, during its passage through the lungs: but this cause is insufficient to account for the indisposition to coagulate during life, and want of coagulation after death. The blood of persons afflicted with certain diseases of the lungs, as emphysema, or consolidation, will be equally black from defective respiration, but, after death, it will be found coagulated. The fluidity of the blood, after death, from the adynamic fever, therefore, must depend on some other cause, than on defective respiration. Nor does the fluidity depend on the slow manner of death, and consequent slow circulation of adynamic fever patients: for, in the slowest death, from emphysema of the lungs, the blood will be coagulated, and not only will there be clots of fibrine in the heart, but, arborescent fibrinous coagula will be seen extending several inches along the pulmonary veins.

The fluidity of the blood, therefore, does not depend on the slow manner of death, nor on defective, or weak respiration: but on some change in the blood itself, which may reasonably be attributed to a diminution of its vitality.

It should be observed, that the above remarks apply to the state of the blood during the ur-

gency of the adynamic fever: for, before the fever is fully formed, and where the disease is slight, the change in the blood will be slight also. And further, the blood recovers its natural character, as quickly as the adynamic character of the fever subsides; therefore, the blood of convalescent patients, does not exhibit the peculiarities; and if, from any cause, they die, it will be found coagulated: so also, if convalescents are seized with an inflammation, as a peritonitis, the blood will be cupped and buffed.

The peculiar characters, during life and after death, are seen in a degree according with the urgency of the adynamic fever, at the time the blood was abstracted, or, at the period of the decease of the patient.

## OF DEAFNESS.

During the course of the adynamic fever, deafness frequently supervenes; and at the time when the irritation, and consequent excitement of the brain, are on the decline; for, as the excitement abates, the patient ceases to talk, or mutter; the senses become more blunted; he sleeps much, and soundly; and deafness ensues. Now, as the cessation of the cerebral

excitement, is the first favourable change ; and, as the deafness takes place simultaneously, it may be considered a favourable sign, also. The deafness, is, for the most part, in a degree proportioned to the violence of the disease ; and, when the disease is slight, it rarely occurs.

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## **CHAP. V.**

OF  
**THE CAUSES**  
WHICH  
**RETARD CONVALESCENCE,**  
OR  
**PREVENT RECOVERY.**

THE period, between the decline of the fever and the re-establishment of convalescence, is usually short: for, no visceral lesion having taken place during the urgency of the fever, the various organs quickly recover their healthy functions, and convalescence is established. But it will happen, from various causes, that this period will be protracted, and convalescence, consequently, be more or less delayed; or even, that the obstacles to recovery will so overbalance the restorative powers as to prove insurmountable, and death ensue.

## 82 CAUSES WHICH RETARD CONVALESCENCE,

The chief causes, which retard convalescence, or prevent recovery, are these: old age; great inanition; lesion of an organ prior to the attack of the fever; the too copious abstraction of blood, or copious haemorrhage from the bowels; organic lesion occurring during the course of the fever, as from accompanying local inflammation, or from the effusion of blood into the parenchyma of the lungs; an excessive diarrhoea from irritation, sub-acute inflammation, or ulceration of the mepiparous glands and mucous lining of the intestinal canal; and, lastly, irritation of the stomach and liver with bilious vomiting and mucous dejections.

In old age, the vigour of life is past, and, notwithstanding the viscera are left in a sound state after the fever, the organs recover their functions slowly, and convalescence is necessarily delayed.

Great prior inanition from scanty and bad food and every distress attendant on extreme poverty, the too copious abstraction of blood, or copious haemorrhage from the bowels during fever, leave the powers of life at so low an ebb after the decline of the disease, that the organs require a long time to recover their functions; and it is with difficulty, as well as great delay, that the patient reaches convalescence:

and if, in the hope of making greater progress, a liberal support is prescribed, the very weak powers become oppressed, and an immediate and often fatal relapse is the consequence.

The condition of these patients, during the period between the decline of the fever and convalescence, is very embarrassing; for, although the urgent symptoms have subsided, and the patient has no complaints to make, still the progress of amendment is so very slow, that it excites suspicion lest there be some latent mischief. The adynamic character has subsided, the eyes are become bright, the skin clear, the tongue clean, and the appetite begins to return; but, withal, this state of the patient is not satisfactory; he is rather restless, there is a stare in the eye, and the night is passed more in watching than in sleep; and the sleep obtained is not sound or refreshing, but is disturbed by wandering, and frequently broken. All these signs result from the extreme weakness of the physical powers, and the small quantity of blood in the body; whereby the force of the circulation through the brain is insufficient to afford the natural degree of pressure requisite for the due performance of the functions of that organ.

The recovery of these persons is exceedingly tedious, but they all do well eventually, if we

**84 CAUSES WHICH RETARD CONVALESCENCE,**

have patience, and do not harrass them with attempts to accelerate convalescence.

Sometimes, as the adynamic fever is on the decline, there takes place watching, with a peculiar staring, rather brilliant, and observant eye, and frequent lifting up the head, as it were to listen, and mild delirium.

The pulse is frequent, generally 120 in the minute; its stroke is rather open and vibrating, but is short, and leaves no impression on the finger; and the artery is very compressible. These signs must not be mistaken for irritation or sub-acute inflammation of the brain: they occur in patients who have lost much blood; they are the result of that loss, and depend immediately on a defective arterial impulse, and defective supply of blood to the brain.

Organic lesion, whether it existed prior to the attack, as in asthmatic people, or whether it took place during the course of the fever, as consolidation of the lungs from inflammation, will, in every instance, very much retard convalescence: for, after the adynamic character of the fever shall have subsided, there will recur a febrile exacerbation every evening, for many days or weeks, which prevents the return of the

appetite. And, even when this febricula shall have disappeared, and the appetite be restored, the organic lesion will prevent perfect and effectual assimilation, and so the recovery of flesh and strength will be exceedingly gradual, and convalescence thereby much protracted.

If these patients suffer a relapse from a recurrence of inflammation in the diseased organ, or from a too full diet, it is very apt to destroy them.

The ochre-coloured diarrhoea, so frequent at the decline of the fever where the disease has been severe, is sometimes excessive; and, by keeping the patient very weak, delays convalescence: but it is seldom so violent as to prevent recovery, unless it is aggravated by an unsuitable treatment, when it will gradually exhaust the patient.

The last cause which I have remarked is an IRRITATION OF THE LIVER AND STOMACH, WITH BILIOUS VOMITING AND MUCOUS DEJECTIONS. I have not met with many cases of this description.

In each of them there was more or less irritability of the stomach during the course of the fever, which gave rise to occasional bilious vomiting. They all recovered from the adynamic

## 86 CAUSES WHICH RETARD CONVALESCENCE,

fever; but, as the fever declined, the irritability of the stomach and bilious vomiting increased; and the dejections became frequent, and consisted very much of bile and small flakes of mucus.

In one case, where the fever had been severe, the patient sunk in a few days. In a second, where the fever had been mild, the patient had a very protracted and dangerous illness afterwards, but, ultimately, recovered. In the third, the fever was mild, and the irritation of the stomach and bilious vomiting subsided in about ten days after the subsidence of the adynamic fever; and the patient did well.

These cases were novel to me; and I was at a loss to comprehend their nature and to direct the treatment. Although the vomiting was frequent, the stomach was free from nausea in the intervals, and there was desire for food; but no sooner was this desire gratified, than vomiting returned; except, on some occasions, when the patients ate a very small quantity of food for which they had a particular desire, as a single oyster, or a morsel of animal food, with a pickled onion.

The matter vomited, when not mixed with food, was, at first, yellow and ropy, and consisted of bile and mucus; afterwards, it was of a verdigris green. The dejections were much

of the same character, being, also, at first, yellow, afterwards, of the verdigris green, and contained much mucus, chiefly in the form of flakes, resembling small pieces of membrane. The dejections were frequent, but not distressing ; and were increased and aggravated by the mildest mercurials, as the hyd. c. cretâ and the blue pill.

I observed that this vomiting was frequently preceded by a cough, just as happens in patients labouring under phthisis, or hooping-cough ; and, as the patients themselves had a consumptive aspect, and were of consumptive families, I thought it probable there existed slow tubercular disease in the lungs ; which, by contiguous sympathy, extended irritation to the liver, and excited a very abundant secretion of bile ; and this, as is common under other circumstances, passed from the duodenum into the stomach, and provoked vomiting. Or, as I am much inclined to believe, the presence of pure bile in the pyloric end of the duodenum will excite sickness, and, by the efforts of vomiting, will pass into the stomach and be thrown up.

These views were very much substantiated by the dissection of the patient who died, and which was the second case that occurred to me, the first having been the one of very protracted and

dangerous illness. By this dissection, it was found that the lungs were affected with tubercular disease, and the liver diseased also.

### OF CONVALESCENCE.

The re-establishment of the health of patients, after the adynamic fever has terminated, is, perhaps, more rapid and complete, under favourable circumstances, than after any other disease whatsoever.

And this is accounted for by the fact, that the persons most obnoxious to the invasion of this fever are the young and robust, the greater part of whom have never before been seriously indisposed; and, also, that the fever, speaking generally, does not leave behind it any organic lesion. As soon, therefore, as the fever has declined, the natural vigour of the constitution rallies, the various organs actively resume their functions, and convalescence is remarkably rapid. I have known a convalescent gain flesh after the rate of two pounds in three days, for three weeks successively.

Under less favourable circumstances, the period of convalescence is uncertain. At one time, it may be early, at another, protracted, and is

influenced by many causes; such as, any unsound condition in which the body may be left, the quantity and quality of the food, the purity or impurity of the air from locality, or the ventilation of the room or ward in which is the convalescent.

Whenever an organ has suffered much during the course of an adynamic fever, convalescence is very apt to be protracted, that organ requiring time to resume its healthy functions, or to adapt itself to the new circumstances which may arise out of its diseased condition. Thus, the functions of the brain may remain disturbed for weeks, or those of the lungs be imperfectly performed.

Diet, also, influences the period of convalescence; for the weak and susceptible state of the stomach and bowels, together with an eager appetite, render it exceedingly difficult to arrive at health without frequent checks; every little indulgence or excess being immediately followed by general disorder.

The continuing to breathe the impure air of a bad locality, or of a close room, or ill-ventilated ward, retards convalescence; and, from this

cause, one sometimes sees patients quite at a stand-still for many days. It would seem as if the external agents, which tend to destroy life, were in equal balance to the weak restorative powers of the system, and so arrest the progress of recovery.

Convalescents are extremely susceptible of cold, and consequent organic inflammation. I knew a young woman who lost her life from rheumatic inflammation of the lining membrane of the heart, brought on by exposure to currents of air, and to a damp atmosphere. This inflammation destroyed her in less than thirty hours. The case has been already alluded to at page 49.

Convalescents are always importunate to be allowed to sit up; but their request must not be readily acceded to. The very weak state in which the muscular system is left, and in which the heart participates, renders them very unequal to maintain the erect position; and, therefore, when patients sit up for the first or second time, they should, on no account, be left alone, although they may be seated apparently safe in a commodious chair: for it will, now and then, happen, that, after a short time, the action of

the heart will fail to propel a due supply of blood to the brain, and the patient will faint; which exposes him to the danger of a fall from the chair. I knew an instance in which a convalescent received so severe an injury from a fall of this kind, as to deprive him of life. This is a very unhappy occurrence, and should be carefully guarded against.

## OF RELAPSE.

Convalescents are more liable to a relapse after the adynamic fever, than after any other disease; and this may be accounted for by the very enfeebled and exhausted state in which the powers of the system are left.

Moreover, as the fever seldom leaves any organic lesion, and as it generally attacks the young and the healthy, the return of the appetite and of the digestive and other functions, is remarkably quick: the appetite, indeed, is often voracious, and always exceeds the digestive powers of the stomach; and, hence, one of the most frequent causes of relapse. So pressing, indeed, is the desire for food, that, however strict the physician may be in his injunctions, the patient cannot, on all occasions, restrain

himself. The consequence is an overloading of the stomach, and, weak as this organ yet remains, its powers are soon oppressed or overwhelmed, and a relapse ensues. The severity of the relapse accords with the severity of the cause, and of the prior adynamic fever.

When the stomach is oppressed by a too copious meal, the patient grows restless; he feels a load and fulness about the stomach, with a general uneasiness, and the fulness soon increases to a distressing distention. The face is flushed; head-ache supervenes; all the secretions are quickly diminished; the tongue becomes dry; the urine scanty; and an accession of fever takes place towards the evening, and the night is passed in a state of watching or delirium, and of great misery. These symptoms are, sometimes, relieved by a spontaneous diarrhoea, by which the undigested matter is carried off; but, more generally, the disturbance of the system continues for several days, gradually diminishing however, and the patient is again convalescent; though with an additional loss of flesh and strength.

If the adynamic fever has been very severe, and the convalescent is extremely weak, an excess in diet not only oppresses, but overwhelms the powers of the stomach. The patient then

sinks, at once, into an alarming prostration ; he lies on the back powerless ; delirium returns ; all the secretions are arrested ; the tongue becomes dry and black ; sordes collect about the teeth ; the urine is almost suppressed ; and the skin dry, and of unequal temperature ; the belly, chest, and head being hot, while the extremities are cold. Under these circumstances, the patient generally sinks in three or four days. In some instances, the patient will shout and halloo, as much as his strength will permit, for the first day or two of the relapse, then, he will scream for another day, and, lastly, sink into insensibility.

I think I have observed that those patients who get up soon, and continue up after a meal, are more frequently subject to indigestion and relapse, than those who take their meals in bed ; the recumbent posture being more favourable to digestion.

Another cause of relapse is the walking out in the open air too soon. Convalescents are always susceptible, and, in their weak state, the exertion of walking, even very slowly, brings on perspiration, which subjects them to cold : and this imprudent exposure will often be followed by shivering, head-ache, and a return of fever.

Another cause of relapse is violent mental emotion. The nervous system, having suffered very much during the course of the fever, is weak and susceptible, and easily deranged or overpowered by any shock. In a relapse from this cause, the disturbance of the nervous system is sometimes dreadful, giving rise to fierce delirium, which, in a few days, terminates in death. A remarkable example of this occurred in a young Irish woman, Ann M'Arthy, age 26, who was admitted into Guy's Hospital, on the 20th June, 1827, with the adynamic fever of the second degree; having been already ill two weeks.

The course of the fever was favourable, and she was soon convalescent.

On the 10th July, a patient, who was about to leave the hospital, borrowed M'Arthy's bonnet, and, instead of returning it, took it away with her and kept it. M'Arthy became uneasy, and another patient said to her "ah! you'll never see your bonnet again!" At the idea of losing her bonnet, M'Arthy was greatly distressed; she worked herself up into a violent rage; and said she would tear the woman to pieces.

Soon after this, she became incoherent; fever acceded in the evening, and fierce delirium at

night. She was outrageous, and talked incessantly about the woman and the bonnet. In the morning, the delirium and the fever were much abated: in the evening, both returned. The expression of her eyes was peculiar, it was that of great suspicion; and, when any one approached, she hid her head under the bed-clothes.

In this way she went on day after day, the character of the delirium abating only as the strength declined, and she died on the 19th July, at 2 p. m., being the ninth day of the relapse.

An inspection of the body could not be obtained.\*

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\* It is the regulation at Guy's Hospital not to examine the bodies of the deceased, without the permission of the friends; and as the Irish have a great prejudice against dissection, they invariably object in the most determined manner. No difficulty is experienced on other occasions, because of the good-faith which this humane regulation has established between the public and the hospital: and, it is to be hoped, that, eventually, it may have its effect on the Irish themselves.

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**CHAP. VI.**

OF

**THE PRIMARY CAUSE.**

IN tracing out the source of the adynamic fever, one must first cast away the shackles of partial and exclusive doctrines : for a little research and reflection will shew that the primary cause is not single, but manifold. There are various agents, which bring about a condition of the blood and of the nervous system, at one time, favourable to the development of this fever, at another time, sufficient for that development : and these agents, therefore, must be looked upon as different primary causes.

It is agreed, I believe, on all sides, that the primary cause is very generally derived from the operation of the physical agent, contaminated air, be it from human effluvia, or contagion :

but this is not the only physical agent: there is another, as the habitual excessive use of fermented liquors

Of the nature and manner of operation of the physical agents, human effluvia and contagion, there is an endless controversy.

One doctrine sets fort malaria\* as the only source of fever; and denies the power of propagation by contagion: another pretends that the adynamic fever is generated by human effluvia, and propagated by contagion: hence, we have contagionists and non-contagionists.

It is not possible for me to enter fully into the primary cause of the adynamic fever, without discussing the great question of contagion; which, for the present, I am anxious to avoid; my attention, hitherto, having been particularly directed to the adynamic fever, after it has made the attack. I, therefore, pass this subject over, with the hope, however, of having it in my power to submit my observations upon it to the public, at some future period.

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\* Malaria is an objectionable term, as being exclusively applied by the Italians to an atmosphere corrupted by emanations from the earth.

### OF THE ACCIDENTAL OR EXCITING CAUSES.

The usual accidental, or exciting cause of the adynamic fever is cold, arising from exposure to wind, or currents of air ; to rain, or damp. Patients will very frequently attribute the attack to cold, caught from washing down a yard, from washing linen all day in a wet underground wash-house ; from working in sewers, deep drains, and the like.

Moral agents, also, prove, at times, exciting causes. The most frequent are grief and fear. Grief, from misfortune or disappointment : fear, from the violent mental emotion excited by a sudden fright. The attack from fear is sudden, from grief, gradual ; but the fever, in either instance, is violent, and the case desperate.

In the greater part of the cases of the adynamic fever, the disease is brought about without any accidental or exciting cause ; the patient never having been subjected to the catching cold, or to the influence of mental emotion. Under these circumstances, the production of the fever may be said to be spontaneous, arising out of the condition of the body ; and the development is then slow, and progressive, requiring many

days, or weeks: whereas, when it is brought about by an accidental cause, as cold, it is fully formed in a few hours. This difference in the mode of development is very remarkable; and constitutes the two-fold way of attack which has been already detailed.

It is probable that many persons would escape the adynamic fever, if they escaped an accidental cause. I take it for granted, that, no accidental cause can produce the adynamic fever, unless the body is already predisposed, by being under the influence of the primary cause, as the having been exposed to a contaminated atmosphere, &c. Thus, many who have been exposed to the same primary cause, which has already produced the adynamic fever in others, will continue well, until they are subjected to an accidental cause, as cold; and then the adynamic fever is immediately developed. These persons would probably have escaped, if they had not taken cold: for, although their bodies may have been under the influence of the primary cause, the powers of the constitution would have borne up against it, and have eventually overcome, and have got rid of this influence.

This position is illustrated by analogy, drawn from the intermittent fever, or ague. Several persons shall work together, during the harvest,

in a fenny country, and be equally exposed to the influence of marsh miasma. One will soon be overcome by this influence, and be affected with the ague: another will escape for weeks, until he accidentally takes cold, and ague will then be immediately developed: a third will escape as long as he can obtain a supply of work, and furnish himself with good food and lodging, the body being thus well nourished, and able to resist the influence of the miasma; but when winter sets in, and he is thrown out of work, and subjected to every privation, then, the ague develops itself; although he may not have been exposed to marsh miasma since the harvest. It may, therefore, be concluded, that had the second person escaped the accidental cause, cold, and the third, not been subjected to privation of the necessaries of life, they would both have resisted the influence of the miasma, and have escaped the ague.

## OF THE DISTINGUISHING SIGNS.

There is something so remarkable, so characteristic about the adynamic fever, that, when it has been once well observed, it is never after-

wards difficult to recognise: a diagnosis, therefore, may always be formed without the fear of mistake.

The peculiar dingy and dusky colour of the face; the bluish flush upon the cheek; the stupid countenance; the unobservant, drooping, and often glassy eye; the dulness of hearing; the slow interrupted speech; the diminished sensibility to external impressions; and, indeed, the blunted state of all the senses; together with the red-tipped, and dirty coated tongue; and the very great prostration of strength, are all distinctive signs, and point out unequivocally the nature of the disease. To one accustomed to contemplate the physiognomy of patients afflicted with the adynamic fever, the disease is recognised at a single glance: the want of animation and expression, indeed, the lifelessness, as it were, combined with the dusky colour of the face, being, in themselves, signs diagnostic.

There are only two affections with which the adynamic fever is likely to be confounded, namely, delirium tremens, and a febrile state which accompanies the latter stages of some diseases of the urinary organs. And there is so much similarity in the disordered condition of the nervous system in all these diseases, that I think it would not be difficult to shew that they are

only modifications of the same thing, produced by different causes. They may, nevertheless, be easily distinguished.

Delirium tremens is known by the peculiar and excessive tremor of the muscles, from which its name is, in part, derived; by the very short and breathless respiration, caused by the tremor affecting the diaphragm; and, also, by the vacant, unsteady, and staring roll of the eye; by the constant, and extreme agitation; and by the history of the patient's habits.

The febrile state which accompanies affections of the urinary organs is at once distinguished by the presence of the local disease.

There is an aspect of the face attending some diseases of the lungs, which, at the first view, may give to the inexperienced the impression of adynamic fever; but a second glance will rectify the mistake; for, although the colour of the skin corresponds very nearly with that in the adynamic fever, the eye has not lost its lustre, nor the face its animation.

In the sudden manner of attack already described at page 33, in which there was an alarming congestion of the brain, the state of the patient very much resembled a state of apoplexy;

yet, by a close investigation, it will not be difficult to distinguish these different conditions. It is true, there is pressure on the brain in both instances, and, so far, both may be said to be apoplectic; and there will even be a greater diminution of power in the one side than in the other: nevertheless, the history of the patient, prior to the attack, the signs of the adynamic fever, the prostration of strength, the dirty coated tongue, and dusky colour of the body, with a quick and feeble, instead of a slow, labouring pulse, will shew that it is a congestion of the brain from an attack of the adynamic fever, not from an ordinary apoplexy. The age of the patient, too, in conjunction with the other signs, is distinctive: the adynamic fever generally attacking young persons, and apoplexy those past the middle period of life.

In consequence, also, of the prostrate powers of the nervous system in the adynamic fever, the functions of the brain are very much oppressed by the pressure of a congestion, which, in a healthy and vigorous state of the nervous system, would be borne with comparatively little inconvenience.

The same degree of pressure in different conditions of the nervous system will produce very different degrees of effect.

## OF THE PROGNOSIS.

The benefits which have accrued from the advances of civilization are no where more conspicuous than in the altered character of the adynamic fever. It is now not only become rare, but a thing almost unknown in England, to see the inhabitants of a street, or the population of a town, swept off by a malignant fever: the character of the adynamic fever is so moderated, as hardly ever to present an example of that which Sydenham calls "malignant," or Cullen, "typhus." Modern improvements and habits have diminished the intensity of the cause, and, as a natural consequence, is diminished the intensity of the effect: so that the adynamic fever of the present day is mild in character, and, hence, not destructive. On a general principle, therefore, the prognosis is favourable.

The tables, which I have lately constructed to shew the rate of mortality, the immediate cause of death, and other particulars, are not yet sufficiently advanced to enable me to draw satisfactory general conclusions: but it already appears, that by far the greater number of cases are of the first and second degrees only of severity, and not dangerous.

The prognosis, in most cases where there is no serious local affection, is favourable throughout the disease. The following signs may be considered almost critical, and always portend well. They are, first, a re-establishment of the secretions; which is soon evident about the lips, teeth, and tongue: the sordes are replaced by healthy mucus, the coating of the tongue loosens, and the skin grows less harsh. Secondly; the lowering of the pulse, if it has been quick, and an increased tonicity of the artery by a diminution of its calibre; a diminution or cessation of the delirium and restlessness; tranquil, continued sleep, and also, a profound, or, in vulgar language, "a dead sleep," which will, at times, last 24 hours, to the alarm of the friends; the voluntary change of posture from the back to the side; the return of taste and desire for food; diarrhoea of ochre-coloured dejections, followed by the subsidence of the flatulent distended belly; and voluntary succeeding to involuntary dejections: and all these favourable signs succeed each other, for the most part, in the order in which they have been above set down.

All these favourable signs are nothing more than the return of the natural and healthy functions of all the organs of the body; for, in common cases of the adynamic fever, there is

an equal and general derangement in the function of every organ. This derangement is most visible in the functions of the brain, because, disorder in that organ is at once evident to our senses, being, as it is, the centre of the animal life, and the medium of communication with the external world: but, if the other organs of the body could manifest their condition by outward signs as certainly as the brain does, it would be seen, that the derangement of their functions was, at least, equal to the derangement of the functions of the brain itself.

Deafness has, before, been stated to be the effect of subsided excitement, and may, therefore, be looked upon as favourable; but it is an unimportant criterion.

In a patient lying in the congestive state, it is favourable for the languid circulation to grow vigorous, the temperature of the skin to increase, and the blueness to diminish: on the other hand, if the congestive state continues, in spite of remedies, it is imminently dangerous.

The unfavourable signs arise from prominent affection of the brain, of the lungs, or of the bowels separately; or, from obstinate and ex-

cessive general functional disorder, without prominent disease of any organ.

Where the disease of the brain indicates danger, it is at the height of the fever, till which time, from the attack, it has gradually grown more urgent. The dangerous signs are, great restlessness, great and continued muscular exertion, with excited circulation, heat of head, and haggard countenance; and, if succeeded by coma, they are not only dangerous, but fatal.

When the disease of the lungs indicates danger, it is generally at the decline of the fever; and the diseased condition is not sufficient to destroy quickly, but to prevent the patient, in his weakened state, becoming convalescent, and so, gradually, to wear him out. The signs are, short respiration, cough, blueness of the face, and continued loss of strength, notwithstanding the capability to take considerable support.

When there is danger from an affection of the intestinal canal, it happens at two periods, and is of two kinds; the one, after the fever has existed for a considerable time, but is still urgent; the other, after all febrile signs have subsided, and the patient approaches to convalescence.

The affection which happens at the first period

is indicated by involuntary, black, offensive dejections, and a tympanitic belly; by the supine position, and the dropping of the lower jaw; by the eyes being imperfectly closed; and the temperature preternaturally decreased; and these, together with extreme prostration of strength, mostly prove fatal.

The affection which happens at the second period is indicated by unrestrained diarrhoea of ochre-coloured dejections; by tenderness of the belly, and, sometimes, sickness; and, by continued emaciation and loss of strength; all which exhaust, and, eventually, destroy the patient. There is, here, no affection of the sensorium, nor any sign whatever of the adynamic fever: the diarrhoea prevents convalescence, and wears the patient out. The ochre-coloured diarrhoea is in no way dangerous in itself, but is highly so if kept up and aggravated by an unsuitable treatment.

When there is danger from obstinate general functional disorder, without any prominent organic affection, it is indicated by a protracted interruption of the secretions; by continued loss of flesh and strength; by low temperature and feeble pulse, succeeding to hot skin and excited circulation, and continuing in despite of reme-

dies. This last condition occurs, mostly, in old people, and frequently carries them off.

An attack of inflammation of any organ during convalescence, is very apt to prove fatal, on account of the already debilitated state of the patient.

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**CHAR. VII.**

OF

**THE PATHOLOGY**

OF THE

**ADYNAMIC FEVER.**

IN the examination of the bodies of those who have died of the adynamic fever, there are certain morbid changes pretty constantly discovered in the brain and intestinal canal; and which may, therefore, without impropriety, be said to be peculiar to this fever.

Other organic changes are occasionally found in the bronchial membrane, in the lungs, in the heart, and in the arteries and veins; but, as none of these are constant, they must be considered accidental, not peculiar.

In all dissections, in which it is desirable to ascertain the exact condition of the vascular system of the brain, the examination should

commence with the head; for, if the chest is inspected first, and, as is generally the case, the superior cava or the sub-clavian veins are divided, the gorged veins and sinuses of the brain will empty themselves through the jugulars into the chest, and so modify very much the appearances. Hence, it is common, under these circumstances, to find the larger veins of the pia mater empty and flaccid, while the smaller are gorged. This emptying of the veins of the pia mater and of the sinuses is very much brought about by the great pressure the brain sustains from the force employed to tear off the cranium; a force often sufficient to diminish the conjugate diameter of the brain one inch during the separation of the dura mater.

The pressure from this forcible separation acts, in a degree, on the principle of an exhausting pump: it forces the blood out of the veins and sinuses; and when the skull-cap is removed, and the pressure acts no longer, air will not unfrequently find its way through the divided vessels in the chest into the larger veins of the pia mater, to supply the place of the blood which has been forced out of them. On the same principle, air will sometimes get into one of the larger veins of the pia mater through a wound in the dura mater, the chest not having been opened.

It may be objected, that the air thus found in the veins is the product of decomposition; but, as I have frequently seen it present in them soon after death, without being able to discover an evolution of gas in any other part of the body, I conclude that it must result from some other cause than decomposition; decomposition giving rise to an evolution of gas in various parts at once.

So great an influence has the division of the veins in the chest in allowing the escape of blood from the venous system of the brain, that I have seen all the blood disgorged from the posterior part of the plexus choroides, leaving its vessels flaccid and empty, while the anterior part remained excessively gorged; the evacuation of the posterior part of the plexus being favoured by gravitation, the body lying on its back, while gravitation opposed the disgorging of the anterior part of the plexus choroides, on account of its peculiar situation and inclination.

The morbid appearances depend much on the period at which the dissection is made, and on the cause from which the patient died; dissection, therefore, should be performed as soon after death as is practicable.

If the patient has died from the severity of the fever, the course of which has not been inter-

rupted by any accidental occurrence, then the peculiar morbid appearances will be invariably found in the brain, and intestinal canal. Or, if death has been produced accidentally during the course of the fever, as by an accidental retention of urine; or, after the fever has subsided, by a protracted diarrhoea; or, during convalescence, by the supervention of an inflammation; then, the morbid appearances will be modified accordingly: and it is requisite to consider these circumstances in all their bearings, in order not to confound the morbid changes resulting from the fever itself, with those from any accidental cause.

The bodies of adynamic fever patients seldom grew so stiff after death, as the bodies of those who have died from other diseases. The excessive prostration of the muscular powers peculiar to this fever, prevents the last act of life, the contraction of all the muscles, taking place to the same degree as in other cases.

OF THE MORBID APPEARANCES  
IN THE BRAIN.

The most common appearance in the brain is a serous effusion between the arachnoid and pia mater, which abounds most in the furrows formed by the cerebral convolutions.

This effusion is sometimes slight in degree, giving to the surface of the brain merely an appearance of preternatural moisture; at other times, the degree of effusion is considerable, so that, while the cranium or dura mater is being detached, serum will drip away. Serum also flows out abundantly when the arachnoid and pia mater are peeled off from the convolutions.

This serosity extends over the whole surface of the brain, giving equally to the base the moist or wet condition: it extends also to the ventricles, in which is found a limpid effusion, varying from one, to two or three drachms; the proportion corresponding to the degree of effusion underneath the arachnoid. When the section of the brain is made, forming the centrum ovale, that surface is also preternaturally moist; arising, not from the condition of the brain itself, but from

the serum which has followed the knife when cutting through the membranes and substance of the brain to make the section.

The degree of serous effusion which renders the surface of the brain moist, gives to the arachnoid an appearance of opacity, most evident in those parts which spread over the furrows formed by the convolutions; that is, where the effusion is greatest: but this appearance is, in part, deceptive; for, if the arachnoid is punctured, or the arachnoid and pia mater are stripped from the convolutions and suspended by forceps, the effused serum will drip away, and leave these membranes almost, or quite in their natural state of transparency and tenuity.

Where the degree of effusion is greater, making the surface of the brain wet, the arachnoid will be found slightly opaque; its tenuity, at the same time, being scarcely impaired. This opacity will, on examination, be found to depend, not on adventitious deposit on either surface, but on a slightly increased density of the membrane itself, such as is seen in membranes which have been macerated: and, hence, there is reason to conclude that this preternatural condition is the result of that membrane having macerated, from

the hour of death to the hour of inspection, in the serous effusion.\*

The substance of the brain, under the above circumstances, has not undergone much change: it is never firmer, but generally of ordinary consistence, or one degree softer than natural.

The larger veins, and the sinuses are always very turgid with fluid black blood; except, when the serosity is very abundant; and, then, they are partly collapsed, not distended; but the trunks remain preternaturally large, shewing that they had been gorged, and that the engorgement was diminished by the abundant effusion.

Precisely the same collapsed state is met with in dissection, where the serosity is not abundant, and where, before death, it was evident that the veins of the brain were gorged with blood; but, in consequence of the division of the subclavian veins, or superior cava in the examination of the thorax, the gorged veins of

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\* I have seen a similar effect produced on the peritoneum, in a case of ascites. The peritoneal covering of the liver had become opaque, and detached, just as the cuticle will become opaque and detached from the cutis by maceration.

the brain emptied themselves, through the jugulars, into the chest, and thus became collapsed. This is a circumstance to be held in mind in conducting dissections, as has been already mentioned.

In the horizontal sections of the brain, particularly in the centrum ovale, are seen numerous black bloody points, which, probably, are the smaller arteries containing black blood, as the larger arteries frequently do, and these give to the medullary substance a mottled, dusky shade; which is diminished when the black blood is pressed out of the little arteries by scraping, and, at the same time, pressing the medullary substance with the scalpel. The blood-vessels of the pia mater are not minutely injected.

The perpendicular veins of the corpora striata, and the veins on the posterior superior edges of the thalami nervorum opticorum are preternaturally distended, as are, also, those of the plexus choroides, and the velum interpositum; the distention corresponding with the state of the other veins of the brain.

The cut surface of the cineritious substance

of the brain, will frequently present a dull pink tinge.

In a few cases, there is a decided opacity of the arachnoid from adventitious deposit, and the effused fluid is semi-opaque: there is, also, great turgescence of the vessels, and increased vascularity of the pia mater, with very numerous dark red bloody points in the centrum ovale; and the substance of the brain always retains its firmness, and is, occasionally, a degree firmer than natural.

In no instance did I ever see an adventitious layer of fibrine effused between the membranes of the brain.

In many instances the arteries of the brain contain black fluid blood.

When the serous effusion underneath the arachnoid is abundant, there is, also, in every instance, a corresponding serous effusion in the theca of the spinal cord, which flows out when the brain is removed from the base of the cranium.

Such are the usual morbid appearances in the

brain when death has taken place as a consequence of the severity of the fever. But if, during the height of the fever, death is produced by any accidental occurrence, the appearances in the brain are modified; inasmuch as they are less pronounced. The membranes of the brain will then be found in a natural condition, and there will be scarcely any effusion underneath the arachnoid, so that the brain will not even be moist: the veins will be turgid, and bloody points seen in the centrum ovale. There is sometimes a slightly increased effusion into the lateral ventricles.

**EFFUSION INTO THE LATERAL VENTRICLES.**

It has been already stated, that, where there is effusion underneath the arachnoid, there is always a corresponding increased quantity of serum found in the ventricles, varying from one to three drachms.

The effusion into the ventricles, however, is found to exist in some cases to a much greater extent, amounting to one or two ounces; and this, without a corresponding increased effusion underneath the arachnoid. The effusion underneath the arachnoid, in these cases, is never

## 120 EFFUSION INTO THE LATERAL VENTRICLES.

greater than where the effusion into the ventricles does not exceed two or three drachms ; and, in one dissection, where there was a ventricular effusion to the extent of an ounce or nine drachms, there was no accompanying effusion whatever under the arachnoid ; this membrane and the pia mater, being in a perfectly natural and healthy state.

In every case, in which this more copious effusion has been discovered in the ventricles, the patient has been afflicted by a retention, or by an almost entire suppression of urine for some days previous to death ; during which, there has arisen a fresh train of symptoms, in addition to those of the fever itself ; as has been described under the head of "Retention of Urine."

That this copious effusion into the ventricles results from the affection of the urinary organs, and not from the fever itself, may be inferred, I would, indeed, say, demonstrated, from the cases which have been quoted.

When a patient dies from the urgency of the adynamic fever itself, there will be invariably found a greater or less effusion under the arachnoid, with a corresponding one in the ventricles, never exceeding about three drachms. When,

therefore, a much larger quantity is discovered in the ventricles, it may be concluded that it arises from some other cause than the fever, even though there be effusion under the arachnoid: and, if there is this greater effusion in the ventricles without any effusion under the arachnoid, and an effusion under the arachnoid is invariably found in cases fatal from the urgency of the fever, it follows, that death, as also the ventricular effusion, has been produced by some other cause than the fever; which cause may justly be concluded to be a retention or suppression of urine; seeing that, in every case of copious ventricular effusion, death has been preceded by one or other of these affections of the urinary organs.

#### RATIONALE OF THE MORBID APPEARANCES IN THE BRAIN.

The serous effusion underneath the arachnoid is looked upon, by many, as the result of inflammation, and brought forward as evidence of inflammation having existed in the brain.

But such evidence cannot be received as conclusive, because, the very same state of things is found, on dissection, where, during life, there was no manifestation of inflammatory action

about the brain, where the intellectual operations were undisturbed till the approach of dissolution, and where death was caused by another disease. In short, wherever the nervous energy is much impaired, and death takes place as a consequence, as in delirium tremens, this same condition of effusion is found. And, indeed, where, from any cause, the action of the heart is weak, for some time previous to death, as in phthisis, or any chronic disease, serous effusion, to a greater or less degree, will take place: therefore, the serous effusion is not sufficient evidence of inflammation having existed in the brain.

Serous effusion, underneath the arachnoid, is very common indeed; and its frequent occurrence may be expected, from the peculiarity of the circulation within the cranium.

The opacity of the arachnoid, arising from adventitious deposit, together with albuminous effusion, is never met with where unequivocal signs of inflammatory action did not exist, and must, therefore, be considered as the result of inflammation.

The condition of the vascular system of the brain has, also, been regarded as the result of

inflammation: but, if we examine this condition minutely, and compare it with the condition of the vascular system of any part that has been known to be affected by inflammation, we shall find a very striking difference between them; and which difference will always serve us to distinguish the vascularity of inflammation from the vascularity of congestion.

The increased vascularity of the brain, in the adynamic fever, is confined, first, to the small arteries in the substance of the brain, which form numerous distinct deep red, or black, bloody points, the intervening portions of brain being free from vascularity; and, secondly, to the veins of the pia mater, which are distended with blood, and may be distinctly traced forming an arborescence, the portion of pia mater between the ramifications being free from any preternatural vascularity.

Now, the vascularity from inflammation is seated in the capillaries, and is so minute as to give to the inflamed surface an intense and universal redness, which leaves no trace of arborescent ramifications, nor any intervening portions free from vascularity.

The vascularity of congestion is precisely similar to the vascularity of the brain in the adynamic fever; that is, it is confined to the

small arteries and veins, and forms the arborescent vascularity, having the parts intervening between the ramifications free from preternatural vascularity.

This is very well illustrated in the intestinal canal, by the dissection of persons who have not suffered from any affection of the bowels, but who have lain on the back for some time previous to death; when very great arborescent vascularity of the arteries and veins will be found in those convolutions which depend in the pelvis, and in which the venous circulation has to go on against gravity.

### OF THE MORBID APPEARANCES IN THE INTESTINES.

The morbid appearances in the intestinal canal are found in the lower portion of the ileum, in the cæcum, and cæcal extremity of the colon.

They consist of irregular, red, elevated patches, which vary in extent and figure, being sometimes circular, sometimes oblong. When circular, they may be from the size of a split pea to half-a-crown; when oblong, from the size of a split horse-bean, to that having an extent of one, two, or three inches in length, by half an inch, or an inch, or more in breadth; and, now and then, they will occupy almost the whole circumference of the ileum at its termination.

The number of these patches differs exceedingly, there being, in some cases, only one or two in the lower portion of the ileum; in other cases, they will be very numerous, and occupy two, or three, or four feet of the extreme ileum, the whole of the cæcum, and nearly the whole of the ascending colon. They are generally distinct.

The situation of these patches is evident before the intestines are cut open; the parts they occupy being of a deep red, visible through the peritoneal coat, and palpable to the touch, on account of their density and thickness.

The surface of these patches is smooth and shining, and rather unequal, having many slight, funnel-like depressions, and may be said to resemble a quilted garment. The funnel-like indentations or depressions, causing the unequal surface and quilted appearance, are the mouths of the mucous follicles, rendered evident by the elevation of the intervening mucous membrane.

These red patches bear very much the appearance of spongy granulations, and have ordinarily been set down as ulcerations of the mucous membrane;\* and, on looking at them cursorily, one would come at once to that conclusion. They, also, give to the affected portion of intestine a preternatural density and thickness; and the thickening tending inwards, may lead one to consider it a swollen state of the mucous membrane itself: but, by close examination, the thickening and increased density prove to be adventitious deposit in the submucous tissue; and this thickening of the sub-

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\* This description was written three years ago.

mucous tissue elevates and stretches the mucous membrane, which stretching does away with its natural villous appearance, and makes the surface smooth and shining.

That these red patches are not ulcerations, may at once be seen by stretching the diseased portion of the gut over the finger, and holding it between the eye and the light, when the surface will be found to be smooth, and free from any breach of continuity.

It has long been the opinion of Mr. Langstaff, that these patches are not ulcerations, and some ingenious observations which fell from that gentleman several years ago, first led me to doubt and to investigate the nature of these organic changes.

These red patches have commonly, not universally, a defined edge as regards the thickening, but the decline of the redness about the base is more gradual than abrupt.

In the ileum, these patches occupy the most depending convolutions, and the most depending parts of these convolutions; and are, therefore, almost universally situated over against that part of the intestine which is attached to the mesentery. In the large intestines, their situation is not peculiar, further, than that they

## 128 MORBID APPEARANCES IN THE INTESTINES.

are rarely met with except in the cæcum and ascending colon.

The situation of these diseased portions of the intestinal canal is worthy of remark, for it helps to illustrate the manner in which they are produced: and I shall by and by endeavour to shew, that this disease of the intestine is not primitive, as asserted by Broussais, but is the effect of irritation, excited by the lodgment of liquid putrid faæces.

Where the fever has been urgent and protracted, ulcerations will, however, be found on the surface of these red patches, and they are at once distinguished by the excavations, the surfaces of which are cellular, dull, and yellowish, instead of smooth, shining, and red: and these ulcerations are the second organic change.

In cases still more protracted, these ulcers have been found to perforate the intestine; and through the perforations the contents of the bowels have escaped into the abdomen, and produced death. It has not happened to me to see instances in which the ulcerative absorption has gone on to this extent in the adynamic fever.

In cases where the adynamic fever has declined, and convalescence has been established for some days, if the patient is now carried off by a sudden relapse, or by the supervention of an accidental inflammation, the mucous membrane of the intestines will, not unfrequently, be found simply in a state of ulceration, the red elevated patches having subsided.

These ulcerations are, in some instances, so destitute of thickening, or increased vascularity about the base, and, also, of any attempt at reparation, that they appear like portions of the intestinal canal denuded of its mucous membrane, very much as if it had been torn off. In other instances, there will be thickening and increased vascularity about the base, with an appearance of contraction of the circumference of the ulcers, as if in the process of healing.

I have not yet met with any cicatrices or other proofs of ulcers of the mucous membrane having healed; though it is said they have been found by other morbid anatomists.

#### RATIONALE OF THE MORBID APPEARANCES IN THE INTESTINES.

Except in the Autumn, in those instances in which the attack of the adynamic fever is ac-

accompanied by diarrhoea or cholera morbus, there is no evidence of disease in the intestinal canal ; nor is evidence afforded until the adynamic fever is fully formed, and prostration of the powers of the muscular system very great.

This prostration extends, not merely to the muscles of the animal, but to those, also, of the organic life, and affects the muscular structure of the intestinal canal equally with that of the limbs. It is for this reason that, when the adynamic state is urgent, the peristaltic action is incomplete, and the fæces and disordered secretions of the bowels are not carried off. These fæces and secretions lodge in the most depending portions of the canal, in those portions which have to act against gravity, namely, in the cæcum and ascending colon, and in the knuckle-like convolutions of the ileum which drop into the pelvis ; they are soon decomposed, and evolve a gaseous fluid, which distends the bowels, and causes the tympanitic belly, so frequent in the adynamic fever.

These putrid decomposed secretions lying in the parts of the canal above described, prove a source, first, of irritation, then, of sub-acute inflammation ; and thus it is, that adventitious matter is deposited in the sub-mucous tissue ;

which deposition, together with the inflamed muciparous glands, forms the red elevated patches above described.

These morbid conditions of the intestinal canal grow out of the adynamic fever, and, therefore, are an effect, not a cause, of that disease.

#### OF THE ENLARGEMENT OF THE MESENTERIC GLANDS.

Whenever there is much disease found in the intestines, the mesenteric glands corresponding with the diseased portions are enlarged and reddish, which is particularly apparent when they are cut into: and, in patients very much emaciated, these enlarged glands may be distinctly felt during life. They are always exceedingly tender, and give considerable pain when they are pressed or handled.

This enlargement of the mesenteric glands is occasioned by irritation extended from the diseased portions of the intestinal canal: and, indeed, I am of opinion that disease of the glands of the mesentery, in other cases, is very generally secondary; and excited by an extension of irritation from the intestinal canal, which itself is the part first affected.

### OF THE MORBID APPEARANCES IN THE BRONCHIAL MEMBRANE.

The bronchial membrane is very generally found in a state of preternatural vascularity, particularly that part of it which lines the trachea and larger bronchi; for the preternatural vascularity will be seldom seen to extend to the minute ramifications.

The condition of the membrane is that of simply increased vascularity, its structure remaining unaltered: and, if this increased vascularity is examined closely, it will be found to be minutely and beautifully arborescent.

Adhering to the sides of the lining of the larger ramifications of the bronchi, and particularly at the points of subdivision, there is very generally a considerable quantity of tenacious, viscid, inspissated mucus, which the patient has not been able to expectorate.

The trachea and bronchi are, on some occasions, filled with bloody froth.

Now and then, the bronchial membrane is found thickened, loose, and villous, which diseased condition extends, more or less, to the minuter ramifications: and here the secretions

are muco-purulent. This latter condition is not peculiar to the adynamic fever; it is the result of a bronchitis, whether it occurs in conjunction with the adynamic fever, or independent of it.

In some instances there will be spots and patches of ecchymosis underneath the bronchial membrane.

#### RATIONALE OF THE MORBID APPEARANCES IN THE BRONCHIAL MEMBRANE.

The same reasoning which has been applied to the mucous membrane of the intestines, holds good in regard to the bronchial membrane also.

The same want of power which prevents the expulsion of the fæces and of the secretions from the bowels, prevents the expulsion of the secretions of the bronchial membrane, and allows an accumulation in the larger ramifications, the mere act of respiration being sufficient to expel them from the smaller.

The secretions becoming viscid by evaporation, stick to the sides of the trachea and bronchi, irritate the lining membrane, and provoke frequent efforts at expulsion: hence, the cough so common in the adynamic fever. And the

mucous membrane, being already in a state of irritation, is susceptible, and easily affected by the currents of air which arise from ventilation; and the cough of irritation is, in this manner, converted into pulmonary catarrh of a greater or less degree of severity.

The ecchymoses are caused by the effusion of blood into the sub-mucous tissue of the trachea, and the bloody froth by the transudation of blood a short time before death.

The other morbid appearances are not peculiar to the adynamic fever, nor is there anything peculiar in the mode in which they are brought about; it is, therefore, unnecessary to reason upon them.

#### OF THE MORBID APPEARANCES IN THE LUNGS.

The lungs are, generally, more or less bulky and heavy, and incompletely collapsed.

The anterior portions are pale, the lateral portions of a reddish purple, and the posterior of a dark purple, the purple growing gradually deeper and deeper, from the sides to the back.

Their natural structure is not altered: they

are crepitant throughout, highly so in the anterior portions, the air-cells being here much distended, but less and less crepitant, as we advance to the posterior portions.

The posterior portions are loaded with black blood; the middle portions loaded, but in a less degree; and the anterior portions nearly exangueous; so that the parts most loaded with blood are the least crepitant, and the parts most crepitant contain the least blood: the quantity of blood, therefore, in the various parts of the lungs, is in an inverse ratio to the quantity of air.

If pieces of the preternaturally dense parts of the lungs are cut off and squeezed in the hand, there issues a vast quantity of frothy bloody fluid, which diminishes the volume and density of these pieces, so that they approach more the condition of healthy lung.

In some bodies there will be discovered circumscribed livid patches in the posterior parts of the lungs, varying in size from half an inch to three or more inches in diameter, and extending to a greater or less depth, into the substance of the lungs.

These livid portions are solid and uniform in substance, and abrupt in their termination;

they contain no air, and their cut surface presents no vestige of pulmonic cellular structure. Their substance is not materially diminished, nor is their structure altered by pressure; but pressure causes a little sanguous black fluid to exude from the cut surface.

In the middle of the substance of the lungs there will, occasionally, be discovered black bloody circumscribed portions, resembling very much the substance of the spleen: they vary in size from a nutmeg to an orange, and are lacerable, and easily broken down.

When the adynamic fever is accompanied with inflammation of the lungs, the induration seldom exceeds the first, and never the second degree; and, for the most part, is confined to a certain portion of one or both lungs, which portion is most frequently the inferior lobe.

#### RATIONALE OF THE MORBID APPEARANCES IN THE LUNGS.

All the conditions of the lungs above described, except the induration from inflammation, result from the congestion of blood which exists in these organs during the urgency of

the fever; and which augments as the respiration becomes weaker, and as death approaches. The greater congestion in the posterior parts, arises from gravitation, favoured by the position of the patient; he always lying prostrate on his back for many days previous to dissolution. The congestion in the posterior parts of the lungs compresses the air-cells to a degree as almost to prevent these parts participating in the function of respiration; and, hence, this function is carried on chiefly by the anterior portions of the lungs, which causes the air-cells of these portions to be unusually dilated, and, thus, to approach to that organic lesion which Laennec has denominated "emphysema."

The solid livid portions are formed by the effusion of blood into the parenchymatous, or reticular tissue of the lungs, a considerable time previous to death; which effusion results from the excessive congestion, and the "dissolved" state of the blood; and these livid portions are found, therefore, in the posterior parts, where the congestion is greatest.

The black, bloody, circumscribed portions arise, also, from the same cause as the solid livid portions; namely, the effusion of blood; but the effusion, in this instance, is more recent, and takes place but a short time before

death: whereas, the effusion forming the solid livid portions, happens much earlier; and this difference in the period of the effusion, causes the difference in appearance on dissection.

#### OF THE MORBID CHANGES IN THE HEART.

Any pronounced organic change in the heart is a rare occurrence in the adynamic fever of this country.

It will, nevertheless, be often relaxed, flaccid, and soft.

On one occasion, I have seen it pale, flabby, and extremely lacerable, a state in which it is said to be frequently found in the more malignant fever of hot climates. This example was met with in one of those cases of the adynamic fever which approaches very much to the delirium tremens.

The interior of the aorta will, on some occasions, be seen of a dark scarlet colour, which may be attributed to staining, from the presence of blood in this vessel.

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It has been said, that the veins are found

inflamed, but I have not met with any such condition.

Adynamic fever may be accompanied with inflammation, and consequent change of structure of any organ, or tissue of the body; but, as such are not peculiar to this fever, it is not necessary to enter into them in detail. On a general principle, the changes of structure, which happen from inflammation going on while the adynamic fever is urgent, partake of the nature of the products of atonic inflammation.

If death takes place slowly, while the adynamic fever is at its height, and before the disease has existed long enough to cause great emaciation, all the veins of the viscera will be found loaded with blood; and the lungs, liver, spleen, and kidneys in a state of congestion.

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## CHAP. VIII.

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### RATIONALE OF THE SIGNS OF THE ADYNAMIC FEVER.

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#### OF THE NERVOUS SYSTEM.

THE prostration of the powers of the nervous system is a prominent feature from the very commencement of the adynamic fever ; and cannot be attributed to any other cause than an unfitness in the blood to support the natural functions of the brain.

It is well known that, in order to be fit for the purposes of life, the blood must undergo certain changes, which are brought about by the respiration of a pure air ; and if, by the respiration of an impure air, the natural changes are prevented, or morbid changes produced,

it is, sooner or later, productive of baneful effects. There is no way of accounting for the action of a poisoned atmosphere on the nervous system but through the medium of the blood; for we have proofs of the action of air upon the blood, but none of its action on the nervous system.

That the respiration of an impure air serves to aggravate and keep up the adynamic fever, is evident from what has been already stated to occur, when a patient is removed from a corrupt to a wholesome air. And a striking example of the effect of change of air happened in Guy's Hospital, in a man who, while in the taking-in room, had great cerebral excitement, talking incoherently, looking wild, but at the same time vacant, and flourishing his stick as he was led to the ward: notwithstanding all this, he was too weak to walk without support, and his gait was unsteady and tottering. This man's bed was situated between two open windows, yielding him plenty of cool fresh air, after breathing which for a few minutes only, and drinking a pint of cold barley-water, he fell into a sound tranquil sleep, and awoke free from delirium. This can only be attributed to the pure air rendering the blood more adapted to the healthy functions of the brain.

The almost immediate effect of an impure air upon the blood, and, through the blood, upon the brain and nervous system, is well exemplified in some persons, who, on respiring an atmosphere slightly impregnated with carbonic acid gas by the combustion of charcoal, are affected, in a few minutes, with head-ache and lassitude.

That an impure condition of the blood will generate the adynamic fever is shewn by the experiments of Magendie, who injected putrid fluid into the veins of dogs, and found that all the phenomena of the adynamic fever were, in consequence, quickly developed. The same fact, indeed, is demonstrated by the introduction of poison into the blood by wounds, as from dissection; and which excites an inflammation and symptomatic fever of an adynamic or typhoid character. The blood itself, drawn while the adynamic fever is urgent, exhibits signs of its unhealthy condition; it is surcharged with carbon, coagulates slowly, and the coagulum is loose; all shewing diminished vitality.

This unfit blood, then, being sent to the brain, is incapable of supporting its healthy functions: sufficient nervous energy is no longer supplied to the organs of the body, whence they are not able to perform their functions perfectly. In

this way, in the organic life, is the respiration rendered weak and slow by the incapability of the diaphragm ; the vigour of the circulation is defective from the incapability of the heart ; and the complete evacuation of the bowels cannot be effected, from the want of power in their muscular tunic.

In the animal life, the insufficient supply of nervous influence renders all the senses dull, and all the voluntary powers prostrate ; and this muscular inactivity, together with the weak, slow respiration, and want of power in the heart itself, causes the slow venous circulation : hence the accumulation of blood in the veins, hence the dusky skin, and hence, the stupor ; and hence, the venous congestion of the brain found on dissection.

The strength of the pulse is in an inverse ratio to the adynamic state. The greater the adynamic state, the weaker the pulse ; and, although, in many instances, where the adynamic state is urgent, the pulse is quick, and, apparently, full, the circulation is, nevertheless, slow ; for the artery is easily compressed, and the stroke of the pulse leaves no impression on the finger ; shewing, that very little blood

is sent forward at each contraction of the ventricle.

It is a mistake to affirm that the complete decarbonization of the blood is prevented by the state of the bronchial membrane, and by the impediment which the viscid secretion gives to the free ingress of air; for the dusky skin and venous congestion exist before any bronchial affection is developed, and has been shewn to depend on imperfect respiration, the consequence of defective supply of nervous energy to the diaphragm, to the heart, and to the voluntary muscles.

Such a manner of reasoning is to substitute a secondary for a primary cause; it is not tracing out the concatenation of cause and effect, and is contenting oneself with a specious, in place of a substantial doctrine.

#### OF THE DELIRIUM.

The delirium in the adynamic fever varies much in character, and is produced by the concurrence of many causes.

When accompanied by a degree of stupor, it would seem to depend sometimes on cerebral

excitement from the circulation of impure blood through the brain, together with defective arterial impulse, and slow venous circulation. This happens while the adynamic fever is urgent.

Sometimes, it seems to depend merely on deficiency of natural pressure on the brain, from defective arterial impulse; as occurs, after the adynamic fever has subsided, in patients who have lost much blood; and then, the delirium resembles exactly that which follows uterine or other haemorrhage, and is aptly termed light-headed. Under these circumstances, there is neither stupor nor venous congestion; on the contrary, the skin is become clear, the eyes bright, and the patient is rather restless and watchful; and the action of the heart is quick and weak.

Sometimes, it would seem to depend on the circulation of unfit blood through the brain, together with increased action of the heart and arteries; and here, the delirium is active, and the patient displays considerable muscular power. He is restless, and gets out of bed, and talks with a pretty strong voice; and it is in these cases, if they prove fatal, that signs of inflammation are found in the brain; as opacity, and thickening of the arachnoid, &c. But

we must remember that every case of active delirium depends, in part, on cerebral excitement, not wholly on inflammatory action; and this is the case especially in those who suffered much from mental distress prior to the invasion of the fever, and, also, in those who have been addicted to intemperance. And this should be held in mind in the treatment, and a certain allowance be made in the abstraction of blood, which otherwise appears to be indicated.

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## CHAP. IX.

OF THE  
STATE OF THE BRAIN  
AS COMPARED WITH  
PHRENITIS.



DR. CLUTTERBUCK and his followers contend that the state of the brain in the adynamic fever is a state of inflammation; and, on this opinion, he has founded his doctrine of the seat and nature of fever. To make this position good, the term phrenitis has been used in the most unlimited sense; and the inflammatory and the adynamic species of fever have been confounded.

With a view to just comparison, the things to be compared must be defined, and a limited signification be given to the terms which represent them; for, without this precaution, medical language is obnoxious to great abuse, and

becomes the agent of that speciousness and evasion which gives éclat to ill-founded doctrines.

In cases of phrenitis, the signs are most unequivocal. Not only while it rages, but even during its development, and from the instant an attack is threatened, there is an increase of the energy of the nervous system, to a degree incompatible with the rational exercise of the functions of the brain: the mind is intoxicated by the excess of nervous energy; the mental operations run wild, as it were; as is seen in the elated uncontrollable spirits which usher in the attack, in the heart which beats merrily, in the senses which are all preternaturally acute, in the eye which is bright, in the countenance which is lighted up, and in the muscular actions which are performed with preternatural vigour. There is an excess of health and spirits; and, when the inflammation is established, the pulse beats frequent, full, strong; there is fierce delirium, excessive muscular exertion, greater, even, than the patient was capable of in health: a woman, in this state, will resist the power of four men, will strike tremendous blows; and forcible confinement is indispensable.

This state lasts till effusion takes place, and

annihilates, first, the functions of the animal, next, the functions of the organic life; and the patient dies comatose. On dissection, there is always discovered an adventitious membrane, or layer of fibrine, effused between the membranes of the brain, and serum in the ventricles.

Compare this phrenitis with the most severe brain affection in the adynamic fever; in which, from the beginning, the nervous energy is diminished, the spirits dejected, muscular power prostrate, all the senses dull, the eye vacant, the countenance stupid, and the skin dusky. And, when the brain affection is at its height, the delirium is more active in semblance than reality, is never fierce; the muscular exertions are less than the patient was capable of in health, they are the exertions of a weak person, are easily controlled; and although it is necessary to use confinement, it is with a view to the patient's own safety, not from any fear of harm from preternatural strength. The fulness and strength of the pulse, too, bear no comparison with the fulness and strength of the pulse in phrenitis: and, if patients die, fibrine is never found effused; and the effusion of fibrine is one of the best tests, it is the peculiar product of an acute phrenitis.

To compare such different states, therefore, would be to compare dissimilar things.

And if we descend to the subacute or milder forms of phrenitis, they will be found to differ equally from every degree of the brain affection in the adynamic fever. For the attack in the subacute differs, only in degree, from the acute forms of phrenitis : beginning, as it always does, with unusual vivacity and wakefulness, great flow of spirits, and quickness of intellect ; as is seen in children threatened with hydrocephalus : the functions both of the mind and body are carried on with unaccustomed vigour ; and all these signs are the very reverse of those which attend the attack of the adynamic fever, where prostration of the powers of the nervous and muscular systems is always a most prominent feature.

Again : the state of the bowels in acute or subacute inflammation of the brain, whether idiopathic, or resulting from injury, as concussion or fracture, is the reverse of that state which attends the brain affection in the adynamic fever. In inflammation of the brain, the bowels are obstinately constipated ; and the more urgent the inflammation, the more obstinate the constipation : whereas, in the adynamic fever the bowels are always readily acted upon ; and

the more urgent the brain affection, the more easily are the bowels purged. This is a very marked and distinctive dissimilarity, and is strong collateral evidence of the different nature of phrenitis and of the brain affection in the adynamic fever.

Dr. Clutterbuck has brought forward examples of hydrocephalus to the support of his doctrine: but hydrocephalus is never attended with oneadynamic sign throughout its course: the fever accompanying it is purely inflammatory, not adynamic: they are diseases altogether different, and therefore, any conclusions drawn from hydrocephalus are not applicable to the adynamic fever.

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**CHAP. X.**

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OF THE

**SEAT AND NATURE**

OF THE

**ADYNAMIC FEVER.**

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THE great advances which have lately been made in our acquaintance with pathological anatomy, have put physicians on the alert to discover some local cause of the adynamic fever; and as it not unfrequently happens, that organic changes, in some part or other, are found in the bodies of those who have fallen victims, these parts have been severally fixed upon as the seat of this fever; and the changes being supposed to depend on inflammatory action, it has been concluded, that the nature of the adynamic fever is inflammation. It may, indeed, be said to be the rage of the profession, in the present day, to assign a

local seat to all disorders and diseases; than which, nothing can be more subject to error.

The present state of our knowledge, however, goes to shew that the adynamic fever is a disease of the whole system, and that, therefore, it has no local seat; and further, that the organic affections, which have been set forth as secondary causes, establish themselves at the commencement, or during the course of the fever, and are produced and modified by it; consequently, that the adynamic fever does not arise out of the organic affections, but is accompanied by them.

The adynamic fever so affects and disturbs, for the most part, the functions of all the organs of the body, whether belonging to the organic or the animal life, as to render it a disease difficult to be comprehended. For the disordered functions of one organ will derange those of a second, which, re-acting on the first, will aggravate and keep up its disorder; and this second, becoming in its turn a cause, will derange the functions of other dependent or intimately connected organs: and hence it is, that, for want of close and impartial investigation and contemplation, these several causes are not ranked in their proper

place of mutual dependence, one physician ascribing an undue importance to one cause, another to another cause; and thus have originated the various and dissentient doctrines of the seat and nature of the adynamic fever.

The doctrines of the local seat of the adynamic fever which attract most attention, are two.

The ONE goes to prove that the seat of the adynamic fever is in the brain, and that its nature is inflammation; and therefore, that phrenitis, or inflammation of the brain is the secondary cause of the adynamic fever.

The OTHER goes to prove that the seat of this disease is in the mucous membrane of the bowels, and that its nature is irritation or inflammation: and, therefore, that irritation, "embarras gastrique," or inflammation, "gastro-enterite," of this membrane, is the secondary cause.

Now it is impossible that both can be in the right; and when opinions are broached which do not disprove the one or the other, the presumption is that both are partial, and neither valid.

If, according to the one doctrine, the seat of the adynamic fever is in the brain, it is manifest that this organ must be materially affected in every instance. Any single example, therefore, in which no affection of the brain did exist, is, of itself, sufficient to prove that this doctrine is not founded in truth; and this example I proceed to furnish.

It occurred in Ann Collins, a servant, twenty years of age. She was attacked, in the morning of the eighteenth of April, with slight shivering, which lasted more or less constantly for two days, and which she could not attribute to any accidental cause; on the second day she experienced some little head-ache, which left her before the morning of the third day, and never afterwards returned. She grew gradually worse, and was admitted into Guy's Hospital on the 28th of April, in a state of adynamic fever of pronounced character. The prostration of strength was so great, when admitted, that she was incapable of supporting her own weight. She was not convalescent till the 16th of May; and was left much emaciated.

Here, then, is a well marked example of the adynamic fever which lasted twenty-eight days, and in which there was no affection of the

head, except slight head-ache on the second day of attack. This single instance is enough to render the doctrine of inflammation of the brain untenable, shewing, as it does, that the seat of the adynamic fever is not in the brain ; and, if the seat of the adynamic fever is not in the brain, it would be absurd to say that it depends on inflammation of that organ.

Again, if inflammation of the brain is the cause of the adynamic fever, then, the worse the fever, the worse the affection of the brain ; and, if blood-letting is the remedy, then, the worse the fever the greater the abstraction of blood required : but the contrary is the case.

Was phrenitis the cause, the head-ache, which precedes the development of the adynamic fever, would be the precursor of the inflammation, and would be relieved or removed by blood-letting ; but blood-letting will generally aggravate it, and will, sometimes, so reduce the powers of the system, that the fever is only imperfectly developed, and the patient sinks without the possibility of rallying, and, in a few days, dies. This head-ache then cannot be the precursor of a phrenitis.

The evidence of dissection is also strongly opposed to this doctrine ; because, where death is accidentally brought about during the height

of a violent adynamic fever, the appearances are insignificant, they are in no degree according with the symptoms; for instead of the intense vascularity of inflammation, will be found only a turgescence of the veins, and some bloody points in the substance of the brain; both which are common under other circumstances. Where there is inflammation in the brain, the membranes are intensely vascular in their minutest vessels; which very minute vessels are never found injected in fever.

Further: wherever fever is caused by a local inflammation, the fever abates immediately the inflammation is moderated, and subsides altogether as soon as that inflammation is arrested; whereas, in the adynamic fever, all affection of the head will frequently cease, and the fever continue for days and weeks. Here then is an effect existing independent of its cause: which is impossible. Therefore, inflammation of the brain is not the secondary cause of the adynamic fever.

If, according to the other doctrine, the seat of the adynamic fever is in the mucous membrane of the bowels, that membrane must be affected in every case, and the affection must exist from the beginning.

Now it is very common to see cases of the adynamic fever go through their whole course without exhibiting signs of irritation of the mucous membrane, there being neither preternatural tenderness, fulness, or looseness of the belly; and it would be monstrous to insist on presence of diseased action in a part when the signs of that action do not exist. Besides, whenever a diseased condition of the mucous membrane is found on dissection, that condition has been indicated during life by unequivocal signs, as diarrhoea, tenderness, and fulness of the belly, and often tympanites.

Moreover, in the majority of examples, except in some of those which happen in the autumnal season, there is no affection whatever of the mucous membrane till after the fever is established: to affirm, then, that the adynamic fever arises from an affection of the mucous membrane of the bowels, would be to affirm that the effect precedes the cause, which is impossible.

We may, therefore, conclude that the seat, or secondary cause of the adynamic fever, is not in the mucous membrane of the bowels.

If further proof were necessary, it would be found in cases of chronic inflammation, with thickening, and ulceration of the mucous mem-

brane, which arises from the irritation of constipated bowels ; and will gradually wear out the powers of life without producing one sign of the adynamic fever. Further proof would, also, be found in the development of tubercles in the sub-mucous tissue of the bowels, which excites irritation, sub-acute inflammation, and, finally, ulceration in the mucous membrane itself, and all these conditions take place, and exist, without begetting one sign of the adynamic fever.

A third doctrine of the local seat of the adynamic fever has lately been set forth, namely, inflammation of the glandular structure of the intestines ; but this will be shewn to be an effect, not a cause.

Inflammation of the veins has, also, been suggested as a secondary cause; merely for the reason that, in several dissections of adynamic patients, traces of inflammation were discovered in some of these vessels.

Others, who do not insist on inflammation of any particular part, or organ as the cause, insist, nevertheless, that no fever ever exists without the presence of organic inflammation : the

inflammation affecting sometimes one organ, sometimes another.

But even this doctrine is not tenable ; for active organic inflammation very generally produces a lesion of the organ inflamed, which lesion is often attended with a permanent imperfection of its functions, and always with an imperfect performance of its functions for some weeks or months after the disease has ceased : whereas, organic lesion is rarely the product of the adynamic fever, the healthy functions of all the organs being so rapidly restored, as to admit of rapid, and most perfect recovery.

The fact, that the adynamic fever most frequently attacks persons of robust constitutions, and in the vigour of youth, circumstances favouring active inflammation, and that these persons recover without any trace of organic lesion, and without any delay after the fever has run its course, militates most strongly against the opinion of organic inflammation.

In inflammatory diseases, too, the greater the intensity of the inflammation, the more is the blood buffed and cupped ; whereas, in the adynamic fever, the greater the degree of the fever, the less is the blood buffed and cupped ; and this condition of the blood is very frequently altogether wanting. Organic inflammation,

therefore, is not the cause, nor the necessary attendant of the adynamic fever.

It is so much the prevailing custom to attribute all the disordered actions in the adynamic fever to inflammation, that the nervous system has been almost overlooked, and the derangements dependent on it not duly appreciated.

In diseases purely inflammatory, the sanguiferous system is the more prominently affected; in the adynamic fever, the nervous system.

It may be asked then; where is the seat, and what is the nature of the adynamic fever?

I reply;

THAT the adynamic fever has no local seat:

THAT its nature is a morbid condition of the blood, produced by the operation of the primary cause, the respiration of a contaminated or poisoned atmosphere:

THAT this morbid blood, acting on the brain and nervous system, is of itself sufficient, in very many instances, to bring about the very great derangement and imperfect performance of all the functions of the organic, and of the animal life; which great derangement and imperfect performance of all the functions constitute the phenomena of the adynamic fever:

THAT, in the other instances, this morbid condition of the blood, although not sufficient of itself to produce the development of the fever, generates a predisposition, which, being acted on by any accidental exciting cause, as cold, or mental emotion, causes the adynamic fever to be immediately developed :

THAT the adynamic fever, which is spontaneously developed, is, for the most part, of a more grave adynamic character than that which is developed by the intervention of an accidental exciting cause :

THAT the adynamic fever, which is developed by the intervention of an accidental exciting cause, is more apt to be accompanied with a local inflammation, than the adynamic fever which is spontaneously developed :

THAT the derangement of the functions of the brain and nervous system, produced by the morbid condition of the blood, is, in some cases, aggravated by the operation of certain moral causes; as mental distress, or any violent mental emotion :

THAT the derangement of the functions of the nervous system is of primary importance, and the derangement of the functions of the sanguiferous system of secondary importance in the adynamic fever: except, where the fever is

accompanied with local inflammation, and then the sanguiferous system is prominently affected:

THAT in all cases, whether accompanied or unaccompanied with local inflammation, the derangement of the functions of the brain and nervous system is a prominent and pronounced feature; and demands the especial attention of the practitioner:

Lastly, THAT the adynamic fever, however induced, may or may not be accompanied by local inflammation of any organ or tissue of the body; and that the organs or tissues most prone to inflammation are the brain, the bronchial membrane, and the mucous lining, submucous tissue, and muciparous glands of the intestinal canal.

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## **CHAP. XI.**

### **OF THE TREATMENT**

### **OF THE ADYNAMIC FEVER.**

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THE various signs and infinitely varied conditions of the adynamic fever, result from so many subordinate causes, and these causes are so individually and mutually dependent, that, without both a comprehensive and precise knowledge of the relation in which they stand one to another and to the disease itself, it is not possible to conduct the treatment with satisfactory confidence, and creditable success.

The principles on which to found a judicious treatment, can only be derived from an intimate acquaintance with the pathology of this

fever: for it is by this means only, that we can determine what morbid products result from disordered function, and what from diseased action; and thus have it in our power to appreciate duly the relative importance of the signs, and of the local affections; and understand on what action or condition they immediately or remotely depend, and what place they hold in the long concatenation of cause and effect.

The value of rational medicine is no where better exemplified. A treatment not directed by principle is empirical, and, being empirical, hazardous: for an untimely abstraction of blood, or an untimely purge will sometimes destroy. The practice of the empiric is mostly guided by a single sign or circumstance, which is always an insufficient indication, and particularly in the adynamic fever, where the signs and circumstances are numerous, and each in its turn paramount and subordinate.

In considering the treatment I shall, first, comment shortly on the remedial agents usually employed; and afterwards, speak of the treatment which is specially adapted to the various stages, the different degrees, and the peculiar states, and phenomena, and complica-

tions, which have been described in the body of this work.

The treatment of the adynamic fever resolves itself into four principal objects: namely,

To arrest the progress of its development.

To cure the disease when fully established.

To subdue any organic inflammation which may accompany it.

To conduct the patient from convalescence to health.

And the means by which these objects are to be accomplished, are **EMETICS, APERIENTS, BARK, COLD-AFFUSION, VENTILATION, FEBRIFUGES, BLOOD-LETTING, MERCURY, HYOSCIAMUS and OPIUM, STIMULANTS and REGIMEN.**

#### OF EMETICS.

Emetics are never required, except where the attack was without the intervention of an accidental cause; and then only at the period of invasion: and, as the object is to produce vomiting, not to diminish the powers of life, ipecacuanha should be preferred; and be given in the form of powder, in the dose of from ten

to twenty or twenty-four grains, according to the age of the patient.

Antimony depresses the powers of life too much, and irritates the mucous membrane of the intestinal canal; for which reason, it is a remedy to be avoided, both as an emetic at the outset, and as a febrifuge during the course of the disease.

### OF APERIENTS.

As the bowels are, in most instances, easily acted upon at the commencement, and more and more easily as the adynamic fever advances in its course, and as they are always disposed to irritation and consequent diarrhoea, the milder aperients should be selected; and, of these, such as are the least debilitating.

The best are rhubarb, castor oil, and senna combined with manna. The dose always to be moderate: that of rhubarb varying from five to fifteen grains; of castor oil from one drachm to half an ounce; of infusion of senna from one drachm to an ounce, with a proportionate quantity of manna. The larger of these doses are to be prescribed only at the

commencement of the disease; and, as a general rule, the longer the disease has existed, the less is the dose required.

Although these aperients are all eligible, I have found rhubarb the most so; and so effectually does it answer the purpose, in all states and stages of the disease, that I do not hesitate to recommend its use, to the almost entire exclusion both of the castor oil and of the senna.

The dose of rhubarb can be regulated to the greatest nicety; its operation is mild, and effectual, and certain, and not debilitating; and it leaves the bowels indisposed to diarrhoea.

Senna is apt to gripe, and, sometimes, to purge briskly even in small doses; which, when it occurs, weakens and disorders the patient exceedingly.

Castor oil is nauseous, and will often irritate the bowels; and, after it has operated, will cause them to be relaxed more than is desirable.

Rhubarb is free from all these objections; and its stomachic properties give a tone to the intestinal canal, which enables it to expel its contents, gaseous as well as fæculent; a very great desideratum.

The whole class of neutral salts is decidedly

to be avoided, for the obvious reason, that the properties of these aperients are very opposite to those of rhubarb ; and, consequently, to those which are most beneficial.

Drastic purgatives are never required ; and, therefore, it is unnecessary to speak of aloes, scammony, and the like.

Aperients operate violently in proportion to the age and degree of the fever ; and, in the latter stages, where aperients are sometimes necessary, and where their operation is often succeeded by a dangerous collapse, they should be given in conjunction with stimulants ; as, castor oil in sherry wine ; or, if rhubarb is employed, it may be conjoined with the conf. aromat., and small quantities of brandy be allowed during its operation.

#### OF BARK.

Bark, which was so much employed formerly, is now proscribed by many, and branded with unmerited obloquy. It is lamentable to see how irrationally the use or disuse of remedies is made to accord with favourite partial doctrines. Bark is as serviceable in arresting the

formation of the adynamic fever, as it is in arresting the progress of an ague; and it may be most advantageously employed when the disease has been for some time on the decline, and distinct remissions occur; and, also, during the early stages of convalescence, particularly in hospital patients, who have always to contend, more or less, with an impure air.

There was a signal instance of its utility in Guy's Hospital, in a man who had recovered from the adynamic fever so far as to be on the verge of convalescence; but here improvement stopped, and he remained seven or eight days exactly in the same state, unable to advance one step more towards recovery. His physician, very judiciously, prescribed the decoction of bark with acid, and it was remarkable to observe the immediate improvement.

I have seen patients, in the hospital of a celebrated university, remain, after the fever had subsided, stationary for weeks, unable to make the slightest progress. The constitution was left to its own resources, because, at that time, it was a prevailing notion, that tonics not only did no good, but did harm: bark was proscribed when, in all probability, it would have rallied the system, and have effected a speedy convalescence.

Nor is the use of bark limited to the periods of the formation, decline, and convalescence: it may be administered with advantage in the last stage of protracted cases, where the prostration of strength is extreme, the tongue black and dry, the belly tympanitic, &c.; as will be shewn when speaking of the treatment of this particular condition.

Bark may be given in all its usual forms and doses. The powder, or the sulphate of quinine, is to be preferred to arrest the fever in its formation; and the decoction on the approach to convalescence. The dose of the decoction is from one to two ounces, with a drachm of the compound tincture; of the powder from one scruple to half a drachm; and of the sulphate of quinine from two to four grains, when given to arrest the formation of the fever; and from half a grain to two grains, when given at the decline, or during convalescence.

At Guy's Hospital, the yellow bark, *cinchona cordifolia*, is in general use, because it is found to be equally efficacious as the common Peruvian or quill bark, the *cinchona lancifolia*, and much less expensive.

**OF COLD AFFUSION.**

Cold affusion, employed with proper precaution, is exceedingly safe and beneficial, and is much less in general use than it deserves. It may be applied by means of a shower bath; but a simple method is to place the patient in a tub, either sitting or standing, and let him be supported and kept steady by two assistants; a third assistant stands on a chair, and pours one or two gallons of cold water, in a large stream, upon the head. After which, the patient is to be rubbed dry, and placed between blankets as quickly as possible, and care taken that the feet, if cold, be made warm. The great shock is very apt to make the patient struggle, of which the assistants should be apprized, that they may guard against it.

The power of cold affusion is best seen where the attack is gradual, and commences, in the evening, with a considerable febrile accession, which recurs about the same hour, or an hour earlier every day. I remember an instance, in which a little girl (whose sister was, at the same time, laid up with the adynamic fever)

was attacked with a smart febrile paroxysm in the evening, and which recurred an hour earlier every succeeding day. As soon as the hot stage was set in, the cold affusion was daily used, and with the effect of diminishing the violence of the present, and of every succeeding paroxysm ; and, in a few days, of preventing a recurrence, and thus, altogether putting a stop to the progress of the attack. In all such cases, then, it should be had recourse to.

At any period during the course of the adynamic fever, and in all cases which are not accompanied with local inflammation, cold affusion may be advantageously employed whenever there is a burning heat of the whole surface of the body ; and, particularly, where the skin is very dry, harsh, and contracted, and the prostration of strength great. It diminishes the heat of the surface, saves the strength, disposes the skin to perspiration, and the patient to sleep. I have known delirium cease for several hours after the use of the cold affusion.

When the preternatural temperature of the skin is only partial, affusion would be prejudicial ; but ablution will be grateful and serviceable ; and the hot surface may be sponged

with vinegar and water frequently in the course of the day.

Neither affusion nor ablution is admissible, whenever the increased heat is attended with perspiration.

#### OF VENTILATION.

When the adynamic fever is established, the first care of the physician should be to remove the patient from an impure to a pure air; and this alone is frequently sufficient to ameliorate the symptoms, and lead the patient to convalescence.

I have seen, over and over again, patients begin to improve, without the aid of medicine, the moment they have escaped the foul atmosphere of their own dwellings. And this is not to be wondered at, on the belief that the adynamic fever results from a certain condition of the blood produced by the continued breathing a contaminated or poisoned atmosphere; for then the legitimate inference is, that the unhealthy condition being no longer kept up, but, on the contrary, diminished by the substitution of a pure for an impure air, the

effects of that unhealthy condition diminish also, and thus the adynamic signs subside.

The impracticability of good ventilation is the reason why it is difficult to cure the poor at their own home; where a whole family, perhaps, is cooped up in a small room filled with dirty, musty furniture, and in which all their little domestic operations are carried on. The adynamic fever, under these circumstances, is always protracted; the efforts of the physician are baffled, and all the remedies which he can administer, are barely sufficient to prevent the patient losing ground: much less to conduct him to a safe and speedy convalescence. These are truths which plead in favor of those noble institutions, Hospitals, and declare how necessary they are to the very salvation of the poor afflicted with the adynamic fever.

Be the patient poor or rich, the first thing to be done is to secure him a good supply of pure air.

If he is poor, and confined to one room, let all curtains and bed-hangings, foul linen, and furniture, that can be dispensed with, be cleared away; let the floor be swept, and all evacuations removed without delay, and fumigate the

room with nitric acid, in the way recommended by Dr. Bateman.\*

If the patient is in better circumstances of life, he should pass the day in one room, and the night in another; and let his apartments also be stripped of carpets, bed-hangings, and curtains; for these retain the fever odour, and contaminate the air. When patients have been confined to the same chamber for several days, the comfort and relief they experience on being removed into another is inexpressible. If they are irritable and watchful, it promotes sleep; if lethargic or comatose, it clears the intellect; if delirious and restless, it procures tranquillity.

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\* The following formula may be adopted for the fumigation of small apartments.

Take equal quantities, about six drachms, of nitrate of potash and sulphuric acid; mix them in a tea-cup, and stir them occasionally with a tobacco-pipe or a glass rod. The fumes will continue to be disengaged for several hours, and the cup should be removed, from time to time, to different parts of the room.

If common salt is used instead of the nitre, the vapours of muriatic acid will be disengaged in like manner; but, as they are more offensive to the respiration than the vapours of the nitric acid, this mode of fumigation is less eligible.

It may be observed, by way of caution in the use of these acid vapours, that all articles of steel should be removed, or effectually covered during the process of fumigation, as such articles will become speedily coated with rust.

## OF FEBRIFUGES.

Febrifuge medicines are required throughout the whole course of the adynamic fever, and, as the object is to diminish the heat of the skin by restoring the secretions, and, at the same time, not to provoke an irritable state of the intestinal canal, the most simple and mild salines are to be selected; as the liq. ammon. acetat.; the citrate of potass; and the nitrate of potass. Any of these may be given in the usual dose; and all are individually eligible under certain circumstances. The liq. ammon. acet. is to be preferred; and, as it generally contains an excess of acid, which may gripe or disorder the bowels, it is useful to add five or six drops of the liq. ammoniæ to each dose.

The citrate of potass, prepared with fresh lemon juice, and given in a state of effervescence, is exceedingly refreshing and beneficial; and is best adapted to those states in which the prostration of strength is very great and the heat of the skin not urgent.

The nitrate of potass is an excellent febrifuge, and, it appears to me, from the experience

which I have had of its virtues, that its value is underrated. It is unquestionably the most efficacious febrifuge for children, and I have always had reason to be pleased with its effects in adults. Nitre may be prescribed in lieu of the liq. ammon. acet. and always forms its best substitute. The dose from five to twelve grains.

There are generally alternations of natural and preternatural temperature several times in the twenty-four hours; and febrifuge medicines should be directed to be administered every two or three hours during the febrile accessions, and omitted, or seldom repeated when the skin is cool.

The use of antimony is best avoided altogether for the reasons already assigned.

## OF BLOOD-LETTING.

To employ blood-letting, judiciously, in the adynamic fever, demands great discretion. The prostrate condition of the nervous system contra-indicates the loss of blood, and the degree of this prostration will serve, on all occasions to direct our judgment. On a general principle, the greater the prostration of the powers of the nervous system, the less freely must blood be drawn.

We have seen that this prostrate condition is unfavourable to inflammatory action, that it tends to keep inflammation down, and to give it an atonic character; so that it is impossible for a vehement inflammation to go on while the adynamic fever is urgent, and its degree severe.

The objects of blood-letting are,—

To shorten the course of the adynamic fever.  
To diminish any general inordinate action of the sanguiferous system, which inordinate action, if left to itself, would reduce the patient's strength more than the moderate

loss of blood: or, which might lead to inflammation in any organ so disposed.

To protect any organ or organs from the ravages of any inflammation, which may occur at the attack, or supervene during the course of the adynamic fever.

It is in those cases in which the adynamic fever is quickly developed, that its course may be frequently shortened by the abstraction of blood: but it must not be supposed that blood-letting will always cut short an adynamic fever, as it does an inflammation, as a pneumonia;—no such thing. Blood-letting, therefore, must not be employed and persevered in, under the impression that it will always put a stop to this fever as to an inflammation.

The power and advantage of blood-letting is best seen in cases in which the way of attack is through the intervention of an accidental cause, as cold; and the development of the fever, consequently, sudden. In many of these instances, there is a greatly increased action of the heart and arteries, accompanied often with local inflammation, and with but very slight depression of the powers of the nervous system. Here the state of things calls for blood-

letting; it is highly serviceable, and will effectually cut short the fever: nevertheless, it should be held in mind, that the nature of the fever, even in these cases, is adynamic, though in a slight degree; and that, therefore, the bleedings should not be too large, or too often repeated. The abstraction of blood should be regulated by the strength of the pulse, and by the effect produced upon it, and the other symptoms.

In all cases in which the development of the fever is spontaneous, that is, where it arises out of the condition of the body, and not from any accidental cause, as cold, blood-letting has not the power to cut short the disease. Under these circumstances, therefore, blood should be drawn with great caution, and never largely. I would even limit the quantity not to exceed six or eight ounces; for it is an easy matter to repeat the bleeding, though not easy to make up for blood unnecessarily abstracted.

The spontaneous development of the adynamic fever has been shewn to be generally gradual, and to be preceded by languor, head-ache, and the other signs, which the patient cannot account for; and there will be, in every one of these instances, a marked depression of the powers of the nervous system.

It is true, that the spontaneous development is, now and then, much more rapid, and may, occasionally, be sudden; but here it will be invariably found, and I speak confidently, that the sudden attack has been preceded by headache and languor, for a greater or less time; and the depression of the powers of the nervous system will be manifest. The pulse is never very strong, being rather open than full, and compressible than resisting.

I am extremely anxious to impress upon the reader the fact of the different states which arise from the different ways of attack, the accidental and the spontaneous; because, it settles one practical point of vast importance, and about which the opinion of the profession is so much divided; namely, the power of blood-letting to cut short the adynamic fever; and it enables us to determine those cases which can be cut short, and those which cannot: and thus are established certain critéria for the abstraction of blood.

To the question;

Can the adynamic fever, then, be cut short by blood-letting?

I answer,

Yes: in many of those instances where the

attack is sudden, and through the intervention of an accidental cause, as cold.

But, in every instance in which the development is spontaneous, be it very gradual or very sudden, it is not in the power of blood-letting to cut the fever short.

Where the adynamic fever is not accompanied with local inflammation, the bleedings should seldom exceed eight ounces, and very great benefit will often be derived from the abstraction of three or four.

Even in robust young men, labouring under the second degree of the adynamic fever, in which, apparently, there is considerable strength of action of the sanguiferous system, it is remarkable how small a quantity of blood will reduce the pulse, and bring on faintishness.

When inflammation of an organ accompanies the fever, the abstraction of blood must be regulated by the severity of the inflammation, and by the degree of the adynamic state. Where the inflammation is severe, and the adynamic character of the fever proportionably slight, blood may be drawn pretty freely, and repeatedly: thus, if a pneumonia accompanies adynamic fever of the first or second degree, it will require repeated bleedings to subdue it. But, where the degree of the adynamic fever

is urgent, and an organ is affected, and appears much oppressed by inflammation, blood must be taken away with caution; for the oppression of the organ depends, in part, on the adynamic fever, and not wholly on the inflammation; and if blood be too freely drawn in this case, it will so exhaust the patient as to endanger life.

In all the affections of the brain, the quantity of blood to be abstracted should be regulated by the strength of the pulse and the muscular powers and exertions of the patient. These are always a safe criterion, for noisy delirium, in which the patient shouts and screams, is, of itself, no indication for blood-letting: it will often be appeased by opium, and hyoscyamus, remedies which aggravate inflammation.

As a general rule, local blood-letting by cupping or by leeches is to be preferred. It has a more immediate influence on the organ affected, and is followed by less debility than the abstraction of blood from a vein or from an artery. Thus, the brain is often much relieved by cupping behind the ear, to the extent of two, or three, or four ounces; and in

the same manner are relieved affections of the chest and of the abdomen.

Cupping is in most instances preferable to leeches, because leeches diminish the action of the heart and arteries in an extraordinary degree; and the tediousness and trouble attending their use, disturbs, wearis and exhausts the patient.

The advocates for blood-letting bring forward examples in which immense quantities have been abstracted with the happiest results. I have heard it stated, that in a case of typhus with inflammation of the brain, it was necessary to draw 200oz. of blood before the inflammation could be subdued. This may be necessary in cases of phrenitis, such as have been alluded to in another part of this treatise, but I have never seen any inflammation of the brain accompanying the adynamic fever in which even 100oz. would not in all human probability have destroyed the patient.

These extraordinary, I may indeed say, wonderful accounts, resemble more the tales of romance, and the fictions of a sanguine imagination, than the sedate relation of medical facts.

It is asserted, also, that blood-letting should be employed at the outset of the fever only;

that then it always does good, and that the mischiefs of this remedy arise from its too late administration ; that there is a time, of short duration only, which must be taken advantage of ; that, if this be allowed to pass by, the drawing of blood will be highly injurious. It is acknowledged that an accurate judgment on this point is very difficult ; it is, indeed, "a tide which must be taken at the flood !" but at what moment does the flood happen is not specified ; nor can it be ; and, therefore, rules formed on this principle are not precise, are not solid, are not applicable.

If another and less doubtful criterion for the abstraction of blood cannot be established, the good will never overbalance the prejudicial effects of this remedy : and, I regret to say, the information, which I have been able to obtain on this point, leads me to the melancholy belief, that, within the last few years, adynamic fever patients have sustained more injury than benefit from the abstraction of blood.

It is not the age of the fever which can be the criterion for the abstraction of blood, it is the state of the symptoms : for, on one occasion, the symptoms may demand the loss of blood on the second day ; on another, not till the sixth or eighth. Much depends on the

manner of attack. Wherever there is increased action of the heart and arteries, with headache and urgent febrile symptoms, blood may be taken away moderately, whether these signs happen on the second, or third day, or at any later period. I have seen great relief from blood-letting as late as the fourteenth day, where it was called for by pain in the head, attended with rather a strong pulse and hot skin; and which symptoms had not been urgent till that time.

At whatever period inflammation of an organ may supervene, blood must be abstracted to subdue it; and the quantity be regulated by the violence of the inflammation, and by the existing adynamic state; remembering that where the adynamic condition is great, there is little fear of an active inflammation.

Where there is no local inflammation, one principal object of abstracting blood is to protect any organ from the tumultuous action of the sanguiferous system, and which may, and does affect one organ more than another.

It has occurred to me very frequently to remark with how much difficulty blood is abstracted from adynamic fever patients by cupping; for, although there is intense heat of

surface, there is no determination of blood to the outward parts of the body; the power of the heart is unequal to the task. It generally occupies the copper as much time to cup one fever patient, as to cup two patients affected with any other disease. This fact is opposed to the abstraction of blood.

It has been a subject of general remark amongst observant physicians, that those patients, who have lost much blood, have both the course of the fever, and the period of convalescence very much protracted; that they become reduced to the greatest state of debility and emaciation, and have often much difficulty to struggle through.

This fact should be well considered: and if we remember that the causes of the adynamic fever are such as debilitate the system before the fever is established, and that the adynamic fever itself has a direct tendency to diminish and exhaust, at no distant period, the energy of the vital functions, we should be sparing of the patient's blood, and, for the most part, abstract it in small quantities, and only when the abstraction is unequivocally called for.

## OF MERCURY.

All the preparations of mercury, administered internally, irritate and relax the bowels, more or less. It is well known that, in many irritable and susceptible habits, calomel cannot be borne, because it purges, gripes, and weakens excessively; and, if persevered in, causes ulceration of the mucous membrane of the intestinal canal. Even the milder preparations, blue pill and hyd. cum creta, will, at times, irritate and disagree very much; and hence, the internal use of mercury in the adynamic fever is contra-indicated *à priori*, on account of the tendency to disease in the mucous membrane.

For my own part, I am, every day, more and more disposed to limit the internal use of mercury: for, although calomel, in combination with rhubarb, forms a very good and favourite aperient at the commencement of the disease, when the bowels are sluggish, I am not aware that this combination possesses any advantages over the rhubarb alone. At any later period, it is a remedy in no way eligible;

I know that it is the practice of some very excellent physicians to prescribe the hyd. cum cretâ during the existence of the ochre-coloured diarrhoea; but I have generally seen the diarrhoea subside sooner when mercurials have not been resorted to; and further, I have repeatedly witnessed this diarrhoea to be aggravated and protracted by the hyd. cum cretâ, to the manifest injury of the patient.

Moreover, mercurials may be dispensed with at this time, for the following reason: pale bile is the natural secretion of the liver when the body is much debilitated, and the colour is rendered paler by dilution with the abundant re-established intestinal secretions; so that the ochre-colour, as far as the liver is concerned, is the product of a healthy, not of a disordered action; and it is seen that, as the patient gains strength, the bile assumes a deeper colour. Medicines, therefore, to stimulate the liver, are not necessary.

I do not deny, that benefit does not frequently accrue from the internal use of mercury: on the contrary, it is often evidently serviceable. Mercury introduced into the system, whether by administration internally, or

by friction, has the same tendency to bring about a return of the secretions, and so to do good: but, as this object is effectually attained by the use of mercury externally, its internal administration is not called for; and, as its administration internally is liable to provoke and aggravate irritation in the intestinal canal, it is objectionable; and should, therefore, be employed with circumspection, if not altogether laid aside.

These remarks are intended to apply generally: because there are individual instances in which the internal use of mercury may be had recourse to with safety and advantage: as in slight cases, where the fever runs its whole course without any signs of irritation in the intestinal canal; and also where, as sometimes happens, the bowels continue uniformly sluggish, the dejections very dark and offensive, at the same time that the belly is free, or nearly so, from flatulent distention. Here the pil. hyd. and the hyd. cum cretâ do good without doing harm. But, whenever the belly is tympanitic, it is certain that the vitiated contents lodge in the convolutions, and excite much irritation, which is increased by even the mild preparations of mercury.

Although my experience discountenances the

use of mercury internally, it is altogether in favour of its employment externally.

One of the characteristic conditions of the adynamic fever most difficult to combat, and most desirable to relieve, is the diminution or suspension of the secretions; and the power of mercurial friction to restore the secretions exceeds all other remedies, and is, indeed, very remarkable. I have witnessed such speedy convalescence from the operation of mercurial friction, that my mind is quite made up as to the propriety and utility of this remedy.

I believe it may be advantageously employed in all urgent cases of the adynamic fever; and, particularly, when the brain is much affected: as, where there is oppression or lethargy from fulness of blood about the head; where there is restlessness and noisy delirium; or, where inflammatory action is going on: and, indeed, in all cases, and at all times, when the return of the secretions is obstinately protracted.

It has quite astonished me, on some occasions, to see how quickly the tongue will cast off its dry brown, or black thick coating, the lips and teeth become moist, and the skin soft, and the brain resume its natural functions. Mercurial friction has produced more rapid and favourable changes in very severe

cases of the adynamic fever, than any other remedy I have ever seen administered.

The average quantity to be rubbed in is half a drachm of the unq. hyd. fort. twice a day.

### OF OPIUM AND HYOSCIAMUS.

There are two states in which these remedies are of great service: namely, cerebral excitement, and protracted ochre-coloured diarrhoea.

When there is noisy delirium, wakefulness, and restlessness, with an accelerated and easily compressible pulse, hyosciamus or opium may be given, whatever be the state of the other symptoms, and will be found valuable remedies. They will tranquillize the patient and frequently procure sleep.

When, from any cause, the ochre-coloured diarrhoea is protracted, and prevents convalescence, or begins to reduce further the already diminished strength of the patient, much relief will be obtained from the administration of opium, in small doses, three times a day. It lessens the morbid irritability of the intesti-

tinal canal, and in this way relieves the diarrhoea.

I should recommend the opium to be given in the form of the watery extract, because I understand, from good authority, that this preparation forms the basis of the liquor opii sedativus of Battley, which is seldom followed by the unpleasant effects on the nervous system, so apt to be produced by opium in any other form. Battley's solution is, of course, equally eligible. The dose of the extract may vary from half a grain to three grains, and of the solution from three minims to fifteen or twenty, according to the object for which it is prescribed.

The dose of the extract of hyosciamus may vary from three to ten or twelve grains, and of the tincture from six to twenty or thirty minims.

The opium and hyosciamus are not to be continued when the state, for which they were administered, no longer exists.

The Hyosciamus is a valuable medicine when the preparation possesses the virtues of the plant; but from the uncertainty, and, indeed, sometimes nullity of its effect, it is more than

probable that this is frequently not the case. Was this uncertainty of its operation confined to the extract, it might be attributed to a deterioration of its virtues by the process of preparation: but, as I find the tincture equally defective, I conclude that the virtues of the plant itself are often weak: and I am confirmed in this opinion by my observations on the virtues of the hyoscyamus of warm climates. During a short professional residence at Nice Maritime, I had occasion to prescribe the hyoscyamus very frequently, and was constantly struck with its more decided and certain effects; as compared with the hyoscyamus in England. The superior virtues depend probably on climate.

The preparation which I used at Nice was the tincture, there being no extract. It was of a very dark green colour, and thicker, and more tenacious than the tincture in England.

#### OF STIMULANTS.

Stimulants are much less in use than formerly, because, the adynamic fever being much less malignant, they are much less required.

As an ordinary or general remedy they are not demanded, but they are indispensable in the worst degree of this fever; and exceedingly beneficial in some particular states. The most eligible are brandy, wine, camphor, ammonia, and turpentine.

When the temperature of the surface is below the natural standard, and the belly tympanitic with involuntary dejections, and the powers of life are at a low ebb, wine or diluted brandy should be administered frequently, but with moderation; and, in conjunction, full doses of camphor as three grains, and of carbonate of ammonia as five, or more grains; and turpentine may be injected per alvum. The quantity of all these remedies must be regulated by the urgency of the symptoms, and be increased, or diminished as circumstances point out.

When the adynamic fever has been unusually protracted, and the patient is much exhausted and emaciated, a small allowance of wine, as four ounces, will be serviceable, and accelerate convalescence.

In certain states of congestion also, where the powers of life flag from the oppression of the nervous system, stimulants are necessary. Here they should be given in moderate quanti-

ties, and their effects be narrowly watched, in order that they may be withdrawn, or continued in smaller doses the moment reaction commences; for, if persevered in too long, there will arise great inconvenience from an excess of reaction.

#### OF REGIMEN.

The regimen of adynamic fever patients is highly important, and should be rigidly attended to; for their own desires would run them into the greatest excess, and all its consequences.

While the adynamic fever is urgent, the regimen should be restricted to cold water, toast and water, soda-water, weak lemonade, and gruel; and, when diarrhoea supervenes, the best drinks will be barley, and rice water, or a weak solution of gum-arabic.

Animal broths should not be allowed till the fever is on the decline; when the tongue is moist, the skin cool, and the patient feels desire.

The weaker broths, as veal or chicken, should be first used, and they should be thin

and quite clear, and not flavoured with vegetables, otherwise they disgust the taste, and satiate the stomach. Prior to broths, animal jellies are a grateful nourishment, and may frequently be allowed when broths would be improper. Beef tea is also a medium between jelly and broth.

As the tongue cleans and the appetite returns, the white meats, as boiled chicken or boiled fish, may be allowed: but increase of diet should be directed with great precaution, because the appetite always exceeds the digestive powers of the stomach; and if the patient indulges in too large a meal, it will immediately bring on an accession of febrile action, with most distressing, and uneasy sensations.

Any solid food, even bread, is to be avoided in the first instance.

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**CHAP. XII.****OF THE  
SPECIAL TREATMENT.****OF THE MEANS OF ARRESTING THE  
DEVELOPMENT OF THE ADYNAMIC FEVER.**

IT will be recollected that the adynamic fever attacks in two ways. The one is spontaneous, arising out of the condition of the body itself, and the development is slow and progressive, occupying days or weeks: the other is accidental, through the intervention of an exciting cause, as cold, and the development is sudden.

In this latter way of attack the development of the fever is so sudden as not to allow the practitioner an opportunity of attempting to arrest it. The development of the fever, therefore, from an accidental cause, cannot be prevented.

But, it is far otherwise, where the way of attack is spontaneous, and the development slow and progressive; and if the aid of the practitioner is sought during this period, it will, in very many instances, stifle the fever in its birth, and save the patient from a long and serious illness.

The signs which precede this spontaneous development have already been described to be head-ache supervening about noon and lasting through the day, with great weakness; and, in the evening, a slight accession of fever: these signs recur every day, growing more and more urgent till the fever is developed. The patient is at a loss to account for this indisposition, and should the practitioner not be alive to these indications, the patient will inevitably fall into fever.

Although the judgment here wants the assistance of experience, the very great and unaccountable debility and listlessness, with the other signs, indicate, very evidently, the threatening of an attack of fever. It is of much importance for the physician to see his way clearly; for if he should attribute this obstinate head-ache to any other than its just cause, and be induced to abstract blood, he will inflict an injury it is not always easy to repair. The ab-

straction of blood does no good; and it will, now and then, be succeeded by a gradual and alarming sinking of the powers of life, from which the patient may never recover.

Blood-letting will not remove these symptoms, and, therefore, should not be employed: and should blood be abstracted, and other means fail in arresting the formation of the fever, the patient will be deprived of the strength he would require to bear up against a disease, which, then will run its course. Should the pain in the head be so severe (it very rarely is) as to tempt the practitioner to draw blood, let the quantity be small, and its effects be observed some hours after it has been abstracted; because patients will appear to bear bleeding at the moment, while, in a few hours, its injurious effects will be manifest.

Instead of blood-letting, emetics and bark should be had recourse to. The emetic, consisting of twenty grains of the powder of ipecacuanha for an adult, to be administered an hour before the expected return of the headache; and, after its operation has ceased, the bowels to be opened, not violently purged, by an aperient, as fifteen grains of rhubarb combined, if the physician pleases, with two or three grains of calomel. The bark should then

be given every three or four hours during the absence of febrile heat: the powder in the dose of twelve or fifteen grains, and the sulphate of quinine in the dose of two grains. Large doses, such as are given in ague, are not here required; they are apt to disagree, and bring on vomiting; and they, then, aggravate rather than relieve the symptoms. If the powder and the quinine are rejected, or if they oppress the stomach, a trial of the decoction may be substituted; and this is preferable, in the first instance, where the stomach is susceptible.

When the attack is characterized by constant head-ache and great depression of strength, the same plan should be pursued, the emetic to be given in the evening.

Where the attack is characterized by a periodical and decided accession of fever with head-ache every evening, no indisposition shewing itself through the day, and which mostly occurs in children, the affusion of cold water every evening is exceedingly efficacious in addition to the other means. It should not be used till the febrile heat is universal and decided.

By these several means, the development of the fever will often be arrested, and the patient saved from a tedious illness: but the practitioner, with all his ability and promptness, will not unfrequently have to regret the ineffectiveness of medicine in averting the pending evil, particularly if the patient has been indisposed for many days.

#### OF THE EARLY TREATMENT OF THE ADYNAMIC FEVER WITH A VIEW TO CUT IT SHORT.

It is when the way of attack is through the intervention of an exciting cause, as cold, in which the fever is fully formed in a few hours, that it is in the power of art to cut it short. This manner of attack is generally violent; the force of the circulation is increased, there is severe pain in the head, suffused face and eyes, moist white-coated tongue with a dirty shade, and a plumpness of the skin, and febrile heat of the whole surface of the body, and there is no urgent depression of the nervous system, nor urgent prostration of strength, and the degree of the adynamic character of the fever is slight.

In this state, blood-letting, as late as the third day, will be eminently serviceable, and may re-

quire to be repeated in twelve hours; it will mitigate the symptoms immediately, and frequently cut short the fever altogether. The blood will be buffed and cupped, but not to a degree that the symptoms would indicate.

Nevertheless, blood must seldom be abstracted largely, the first bleeding should rarely exceed twelve ounces, and the effect of it upon the symptoms and upon the patient, will be a guide for its repetition. Circumstances must, of course, direct the judgment of the practitioner as to the necessity of more copious depletion, but I earnestly recommend the inexperienced to act with caution, and not to determine on any violent measures too hastily. Blood-letting must not be carried on, even in these cases, as if it was certain to cut short the fever: it will do so frequently, but it will frequently fail. The physician must feel his way; and if he is in doubt, let the doubt be opposed to the free abstraction of blood.

The age and habits and state of mind of the patient should be taken into consideration; for should he have passed the middle period of life and have given way to the excessive use of fermented liquors, or, should his mind have been oppressed by anxiety, or his body by

great fatigue, blood-letting must be employed sparingly, although the attack may have been sudden and violent, as above described. In these patients there will be found some muscular tremor, with hurried manner and rapid utterance, all which signs shew a tendency to delirium tremens, and contra-indicate blood-letting.

When the way of attack is spontaneous, and consequently slow and progressive, requiring days or weeks for the development of the fever, it is not in the power of art to cut the fever short after it is once fully formed. The symptoms may be moderated by the small abstraction of blood, but they cannot be extinguished. The fever will then run its course.

OF THE TREATMENT OF THE ADY-  
NAMIC FEVER AFTER IT IS FULLY  
FORMED.

I have already considered the early treatment of those cases in which there is a probability of cutting short the disease. I shall now proceed to the treatment of the fever when its course cannot be arrested.

OF THE TREATMENT OF THE FIRST DEGREE.

The character of this degree of the adynamic fever is so mild as to require very little medical treatment.

It is only necessary to supply the patient with good air and fresh linen, to keep the bowels rather freely open by any of the aperients which have been spoken of, and to give a simple saline, as the liq. ammon. acet., in the dose of two drachms three times a day.

No other food than gruel to be allowed till the head-ache and flushing of the face have subsided, and the tongue has become clean; when a nutritious diet may be gradually resumed.

## OF THE TREATMENT OF THE SECOND DEGREE.

Although, in this degree, there is considerable head-ache, with suffused face and eyes, and febrile heat over the whole surface of the body, and the prostration of the powers of the nervous and muscular systems is not urgent; yet, as the fever has been developed spontaneously, and cannot be cut short, and must, therefore, run its course; and, as the force of the circulation is not great, the pulse being compressible, although apparently full, blood must be abstracted sparingly. The object is to moderate the symptoms, and to protect the various organs against an undue momentum of blood, which may lead to inflammation in any organ so disposed.

This end will be effected by the abstraction of six or eight ounces of blood from a vein, which may be repeated in forty-eight hours, if the first bleeding has been beneficial, and circumstances call for a second: but, if the general febrile excitement has been moderated, and the head-ache is still severe, two or three ounces may be taken from behind the ear, by the cupping glass, with great advantage. The ab-

straction of blood, even in small quantities, must not be frequently repeated, on account of the pain in the head, for it will not remove it entirely, and may weaken the patient seriously and unnecessarily.

I have, more than once, pursued blood-letting in these cases, in the hope of curing them speedily; but the attempts have never succeeded, and the debility induced has protracted convalescence very much. The blood is not at all, or only slightly buffered; and seldom or never stopped.

The bowels are sluggish, and the belly often flatulent; which must be counteracted by aperients given every, or every second day, so as to keep them freely open; and the more dark and offensive the dejections, the more are aperients to be persevered in.

Those who are partial to the internal use of mercury, may prescribe it safely in this instance; and calomel, in the dose of two grains, may be combined with six, or eight, or more grains of rhubarb to form the aperient; or five grains of the blue pill may be given, every night; but, as the belly is flatulent, which shows a disposition to the irritation and organic affection of the intestinal canal peculiar to the adynamic fever, it is prudent to use

mercury sparingly; and, towards the decline of the disease, discontinue its use altogether.

In addition to these means, saline medicine, in sufficient doses, as three drachms of the liq. ammon. acet., should be given every four hours.

Pursuing this mild treatment patiently, the head-ache, and other symptoms, will be found to abate gradually, and the patient to be convalescent in the course of ten or twelve days. Convalescence is, however, often more protracted, and should not be expected with too much eagerness.

The delirium at night does not require any particular treatment. It will be useful to have the hair cut off close to the scalp, but not necessary to apply evaporating lotions. The utility of evaporating lotions is, indeed, very questionable, either in these or in more violent cases. I have never seen any decided benefit from them; and they often give cold, and excite a languid inflammation of the eyes, with puriform discharge; and excite or increase pulmonary catarrh.

Sponging the head frequently is exceedingly grateful, and is attended with relief, and not subject to the inconveniences which arise from lotions.

The clipping the hair close to the scalp answers every purpose that shaving the head can do.

#### OF THE TREATMENT OF THE THIRD DEGREE.

The great prostration of strength and dulness of all the senses, which characterize this degree, forbid the general abstraction of blood.

The dusky suffusion of the eyes and face, and the lethargy will be considerably relieved by the abstraction of a small quantity of blood, as three or four ounces, from behind the ear, by the cupping glass; and the abstraction may be repeated in a day or two, if the lethargy and the dull pain in the head continue. The second abstraction should not exceed three ounces: a third is seldom called for. If blood is drawn from a vein to the amount of twelve or sixteen ounces, it will appear to benefit the patient immediately, and may, thus, mislead the judgment; but, in a few hours, he will relapse into the same lethargy, with the disadvantage of a seriously increased prostration of strength.

The congestion does not produce the depression of the powers of the brain and ner-

vous system, but is the consequence of such depression: in the first instance, the congestion would be relieved by blood-letting; in the second, it would be aggravated, because the prostration of strength would be increased.

If we reflect on the peculiarity of the circulation in the brain, in consequence of the unyielding cranium; it will be evident that, in any given state of the brain, under ordinary circumstances, there must be pretty nearly the same quantity of blood in its vessels; and, if we diminish the quantity in the arteries by diminishing the force of the circulation, we shall augment the quantity in the veins and sinuses.

By abstracting a small quantity of blood, as has been advised, the relief afforded to the brain, more than compensates for the loss of the blood; and thus it is of service.

After the small abstraction of blood by cupping, a blister (not large) may be applied to the crown of the head. It is customary to apply blisters between the shoulders, but I prefer the crown of the head, as being more easily got at, and producing less discomfit, and an equal, if not a greater good effect.

It is in this degree of the adynamic fever that the external use of mercury is so eminently

serviceable; because of its unrivalled power to bring about, speedily, a re-establishment of the secretions; which are all obstinately suspended or diminished, as the teeth are dry and shining, the lips and tongue dry and parched, and covered with sordes, the skin dry and harsh, and the urine scanty; and the re-establishment of the secretions is the first harbinger of improvement. The mercury to be rubbed in on any convenient part of the surface of the body, as the inside of the thigh, in the quantity of about half a drachm of the ungu. hydrarg. fort. every night and morning, till it effects the desired purpose; and, I repeat, that mercury has brought about a more rapid and satisfactory amendment than any other remedy I have ever seen prescribed.

The bowels are sometimes sluggish, sometimes relaxed; the dejections are dark and offensive, and the belly full and tender from flatulent distention. These conditions require the daily use of mild aperients to carry off the vitiated contents of the intestinal canal; and, notwithstanding the bowels may be relaxed of themselves, aperients must be persevered in, as long as the dejections are dark and offensive. Rhubarb is peculiarly appropriate, and the dose should be from six to ten grains.

The tenderness of the abdomen depends on the flatulent distention, and will be relieved by the aperients.

All these means combined seldom fail to have an early and favourable influence on the disease, and to remove it altogether in the space of eight, or ten, or twelve days. The emptying the bowels, effectually, will be found to mitigate the delirium, and to render the nights more tranquil; but, if the delirium and restlessness be still very troublesome, blood having been taken from behind the ear, and the bowels cleared; the extract of opium, in the dose of one grain and a half; or the hyosciamus, in the dose of six or eight grains, may be given at bed-time, and repeated according to its effects.

When the fever begins to decline, the relaxed bowels and dark offensive dejections are often succeeded by dejections of an ochre-colour, sometimes so thin and frequent as to constitute the ochre-coloured diarrhoea; the treatment of which will be separately considered in another place.

As soon as the secretions begin to be re-established, and amendment is visible, the mercury should be gradually lessened and discontinued.

be given every three or four hours during the absence of febrile heat: the powder in the dose of twelve or fifteen grains, and the sulphate of quinine in the dose of two grains. Large doses, such as are given in ague, are not here required; they are apt to disagree, and bring on vomiting; and they, then, aggravate rather than relieve the symptoms. If the powder and the quinine are rejected, or if they oppress the stomach, a trial of the decoction may be substituted; and this is preferable, in the first instance, where the stomach is susceptible.

When the attack is characterized by constant head-ache and great depression of strength, the same plan should be pursued, the emetic to be given in the evening.

Where the attack is characterized by a periodical and decided accession of fever with head-ache every evening, no indisposition shewing itself through the day, and which mostly occurs in children, the affusion of cold water every evening is exceedingly efficacious in addition to the other means. It should not be used till the febrile heat is universal and decided.

opposed to the abstraction of blood. Blood-letting is, therefore, incompatible. The loss of eight or ten ounces would sink the patient irrecoverably.

The treatment should be particularly directed to the intestinal canal, as the nervous excitement and debility are kept up and augmented by any loitering or lodgment of the black offensive faeces. Rhubarb is, unquestionably, the best aperient, and should be administered, in conjunction with the conf. opii, in the form of draught, as eight or ten grains of the pulv. rhei, with eight or ten grains of the conf. opii, and a drachm of the syr. zingib. in aq. piment. or cinnam., and be repeated in four or six hours, if the bowels have not been satisfactorily emptied. Should castor oil be preferred, let it be given in the dose of two or three drachms in a glass of sherry wine. The hair to be clipped close, and the head to be frequently sponged with cold water; and tepid or warm ablution of any parts of the body, where the skin is dry and harsh, is very refreshing.

Mercury should be had recourse to without delay, half a drachm or two scruples of the ung. hydrarg. fort. to be rubbed in every eight hours; and every three or four hours should be given the saline effervescing draught of half its

usual strength, as ten grains of the carbonate of potass with two drachms of fresh lemon-juice. This will be grateful, and allay the parching thirst. Soda water is a good drink.

As soon as the bowels are cleansed, opium or hyoscyamus should be given to tranquillize the nervous system, as a grain, or upwards, of the ext. opii, or five grains of the ext. hyoscyam. every six hours; and now may be prescribed, also, the decoct. cinchonæ, in the dose of one ounce and a half; or, the sulph. quinæ, in the dose of one grain, with one minim of acid. sulph. dilut., and a drachm of the tinct. aurantii. The bark to be given alternately with the effervescent draught.

If the prostration of strength is very urgent after the bowels have been relieved, support must be afforded by porter, or brandy and water; beginning the use of these stimulants sparingly, and continuing it, more liberally or more sparingly, as circumstances point out.

All these measures are to be persevered in, and they will often bring about a favourable change; which is denoted by a diminution of the excitement of the nervous system, and by a return of the secretions. Tranquil sleep, however short, is exceedingly beneficial and auspicious.

The further treatment of the bowels, after they have been first cleansed, will be reserved to be spoken of under the "Treatment of the Tympanitic Belly and of the Diarrhea."

By a judicious perseverance in these means, the physician will often have the gratification to save his patient; but the very broken state of the constitution of most of these patients, prior to the attack of fever, renders them very unfavourable subjects; and too often defies the power of the medical art.

As soon as the secretions are re-established and the tongue is become moist, the bark may be administered more frequently, and the effervescent draught omitted, except in the evening, when it may be given once with advantage; as it checks any little accession of febrile heat, and assists in procuring early sleep.

OF THE TREATMENT OF SOME PECULIARITIES  
WHICH DIFFER FROM THE  
USUAL COMBINATIONS OF SYMPTOMS.

These peculiarities have been described as occurring in the milder eases of the adynamic fever, and as consisting in an unequal derangement of the functions of the different organs:

the derangement, in one case, being chiefly in the functions of the brain; in another, in the functions of the abdominal viscera.

The treatment of these cases is self-evident. Where the head is chiefly affected, the attention must be particularly directed to it, and blood be abstracted by cupping. When the abdominal viscera are chiefly affected; it is only necessary to have recourse to aperients repeatedly.

These cases are all mild; and, therefore, require only mild remedial measures.

#### OF THE TREATMENT OF THE PECULIAR MANNER OF ATTACK FROM MENTAL DISTRESS.

The very great cerebral excitement and active delirium demands a treatment somewhat decisive. It must be remembered, however, that, the cerebral excitement does not depend altogether on an increased action of the vascular system of the brain, inflammation, but partly on an excitement of the nervous system itself, independent of the vascular. The affection of the brain, therefore, is of a mixed character; and so, also, must be the treatment.

Blood must be drawn from a vein to the extent of ten or twelve ounces, and the abstraction be repeated in sixteen or eighteen hours, either from a vein or by cupping, according as the force of the circulation shall have been affected by the first bleeding; which must also be a guide as to quantity. The second abstraction of blood should seldom exceed eight ounces, and a third abstraction four or five. The blood-letting must not be carried on in the expectation of its power to put a stop to the brain affection, but to guard the brain from the effects of an increased action, which will go on for some days. If blood-letting is pushed too far, the patient will sink.

After blood has been abstracted, and the bowels have been freely acted upon by rhubarb or castor oil, the extract of opium or of hyoscyamus should be prescribed in rather full doses, the former in the dose of two, and the latter eight grains: and it should be repeated every eight hours according to its good effects.

Blisters should be applied to the crown of the head, and mercury be rubbed in freely.

The blood will exhibit the buffy coat in a middle degree.

OF THE TREATMENT OF THE PECULIAR SUDDEN  
MANNER OF ATTACK.

In the instances in which patients fall down from exhaustion and debility, little is required to be done. If the circulation is very languid, the carbonate of ammonia in the dose of three or four grains, or a little weak brandy and water will bring it about: the fever will then be developed, and must be treated according to the character it assumes.

Where the attack resembles a fit of apoplexy, and there is an alarming congestion of the brain, a few ounces of blood should be drawn from the external jugular vein; but this not till the oppressed circulation has begun to recover. Should the circulation be very weak, brandy and ammonia in small quantities will be necessary; and the same may also be required together with or after the abstraction of blood. The congestion must be relieved by small bleedings, as three ounces, which are also to be repeated with caution: for persons of intemperate habits bear bleeding badly.

When the congestion of the brain is relieved, and the fever developed, it must be treated according to its character.

OF THE TREATMENT OF THE HEMIPLEGIC  
PARALYSIS.

An incomplete paralysis of one side of the body is, not an infrequent occurrence in adynamic fever patients who are aged, or who have been intemperate.

It would seem as if age or intemperance had affected one side of the brain more than the other, which was not manifest in the usual state of health of the individual ; but when the powers of the brain are depressed by the adynamic fever, then the weak part suffers most, and paralysis manifests itself. This paralysis does not necessarily call for blood-letting : blood may be abstracted in very small quantities by cupping, if the symptoms generally call for it, but not otherwise. The treatment should be directed to the character of the adynamic fever, and the paralysis will recover as the other signs abate. I have seen an old lady of seventy-five years of age affected by the paralysis in question, and recover the use of the side perfectly in six or

eight weeks; and this without any abstraction of blood, or any particular treatment, otherwise than was indicated by the fever itself.

#### OF THE TREATMENT OF THE PECULIAR ADYNAMIC STATE.

There being no febrile heat present in this state, but a great and increasing debility, a tonic treatment should be at once entered upon. The decoct. cinchonæ, with six minims of the acid. sulph. dilut., should be given three times a day, the bowels being kept freely open by rhubarb; and there should be also a small allowance of porter or ale, as a wine glass full occasionally, or a little weak brandy and water.

The coated dirty tongue is no impediment to the administration of the bark, as long as there is no febrile heat.

If there is a nauseous bitter taste in the mouth, or a yellow shade in the dirty coating of the tongue, the above remedies should be preceded by an emetic.

Solid animal food must be altogether withheld, till the tongue cleans. Tea, bread and butter, animal jelly, and clear thin veal broth will be acceptable and beneficial.

These patients recover slowly, and the means above recommended must not be employed too freely.

OF THE TREATMENT OF THE CONGESTIVE  
STATE.

This state, consisting in a more or less dangerous depression of the vital functions, does not admit of blood-letting. The abstraction of blood would extinguish the remaining powers of life.

Stimulants are the proper remedies; as brandy, ammonia, camphor, spirits of lavender, and so on; also, warmth, by means of hot flannels to the extremities. Strong coffee, taken hot, is worthy of trial. The quantity of stimulants must be regulated by the degree of the depression of the powers of life; administering no more than are absolutely necessary, and diminishing them as the circulation regains its power: for it often happens that the congestion will be succeeded by a high degree of fever, which will be aggravated by the stimulants administered during the state of congestion. The congestion being relieved, and the fever devaloped, it must be treated as its character requires.

### OF THE TREATMENT OF THE ADYNAMIC FEVER; ACCOMPANIED WITH LOCAL INFLAMMATION.

It is in those cases in which the adynamic fever attacks suddenly through the intervention of the accidental cause, cold, that the fever is apt to be accompanied with local inflammation.

The fever, being here excited by the accidental circumstance of taking cold, is developed before the powers of the system have been greatly reduced by the operation of the primary cause, a contaminated atmosphere; and, therefore, the adynamic character of the fever is generally slight; and the inflammation is violent, or otherwise, according to the greater or less intensity of the exciting cause, cold.

As, however, the accident of taking cold may occur in persons whose systems are affected to a trifling, or to a great degree, by the exposure to a contaminated atmosphere, the character of the fever, so excited, may be slight or grave; and, consequently, the inflammation produced by the same accidental cause which excited the fever, may be accompanied by a slight, or by a grave adynamic character of fever.

The prostration of the powers of the body attending the adynamic fever opposes the violent action of inflammation; and hence, the inflammations accompanying the graver degrees of the adynamic fever are languid; while those accompanying the slighter degrees are often vehement.

A consideration of these circumstances will form a safe guide in the use of blood-letting; which must be regulated by the vehemence of the local inflammation, and by the slight or grave adynamic character of the fever. The strength of the pulse, which is always indicated by its degree of compressibility, is a good criterion.

Gare must be taken in forming our judgment of the presence of inflammation; or we may attribute the embarrassment of the functions of some organs, as of the lungs, to inflammation, while it is only the consequence of former disease. Asthmatic persons, for example, being attacked by an adynamic fever, would have a very difficult respiration, from the depressed powers of the system being less able to oppose the mechanical obstacles arising from the former organic lesion. The history of the patient, and the comparatively little distress and anxiety in the countenance will assist the diagnosis.

OF THE TREATMENT OF LOCAL INFLAMMATION  
OCCURRING AFTER THE DECLINE OF THE ADY-  
NAMIC FEVER.

Local inflammation is a common occurrence at the decline of the adynamic fever, when the return of the secretions relaxes the pores of the skin, and renders patients liable to cold; especially, if they have been the subjects of acute rheumatism.

The adynamic character of the fever exists now no longer; the blood has recovered its wonted vitality, and the arteries their natural tonicity; and, therefore, these inflammations present nothing peculiar, more than as occurring in persons whose physical powers are weak.

Patients, although thus reduced, bear blood-letting better than during the existence of the adynamic fever; and the blood will now exhibit the signs of inflammation; it will be buffed, and cupped.

The parts most subject to inflammation at this period are the peritoneum, the lining membrane of the heart, the pericardium, the pleura, and the bronchial membrane.

OF THE TREATMENT OF THE TYMPANITIC OR  
FLATULENT DISTENDED BELLY.

The tympanitic or flatulent distended belly exists, to a greater or less degree, in almost all cases of the adynamic fever; except those which are very slight.

It always depends on an evolution of gas from the decomposition of retained faeces and vitiated secretions; and the distention of the belly is accompanied with considerable tenderness.

The flatulent distention is a certain indication that aperients are required; and these aperients may be given in pretty full doses at the commencement; as rhubarb in the dose of fifteen grains or a scruple, and castor oil in the dose of half an ounce; and they are to be repeated daily, in less doses, as long as the belly remains tympanitic, and the dejections dark and very offensive.

The tenderness of the abdomen depending on the flatulent distention, and this, again, depending on the retained feculent matter, is not a result of inflammation; and, consequently, does not require the local abstraction of blood, or the use of blisters: it is relieved by the aperients which remove the cause.

When, however, the distention is rapid, as in the sudden attack of the adynamic fever after a meal, the straining of the muscular fibres of the stomach and intestinal canal causes an unusually great tenderness and pain on pressure; which is very much relieved by cupping, to the extent of five or six ounces: a loss of blood which the strength of the patient, at this time, will always bear; and which should take place before the administration of the aperient.

The tympanitic belly, in the latter stages of the severer cases of the adynamic fever, is so intimately connected with the dark or black offensive diarrhoea, that its further treatment will be described under that head.

#### OF THE TREATMENT OF THE DARK OR BLACK OFFENSIVE DIARRHCEA.

This diarrhoea is constantly found in the graver and more protracted cases of the adynamic fever; and is accompanied by the tympanitic belly.

The extreme prostration of strength relaxes the sphincter ani, and the dejections take place without consciousness: they are thin, dark or

black, and exceedingly offensive, like dead animal matter. The frequency of these dejections is no proof of the bowels being empty; for, as long as they are dark and offensive, and the belly tympanitic, it may be concluded that much remains behind. This fact should be appreciated, it being the great indication in the treatment.

Although, therefore, the bowels may be much purged of themselves, aperients must be given sedulously as long as the dejections are dark and offensive; not, however, in large doses, for the graver and more protracted the fever, the more easily do medicines operate; and the object is to free the bowels of their irritating and vitiated contents, and not to purge them further. The dose of rhubarb, therefore, should not exceed eight grains, and of castor oil a drachm and a half; and, where the prostration of strength is extreme, the aperient should be conjoined with a stimulant, as carbonate of ammonia four grains, or a little wine; and its operation should be watched, so that, if it exhausts the patient, support may be afforded by stimulants, as brandy and water.

When the case is desperate, it will not be judicious to wait for the operation of medicine

given by the mouth, but at once to inject a copious enema of thin gruel ; to which should be added a stimulating aperient, as half an ounce of turpentine. The stimulus of distention would be sufficient to cause the bowels to act, but the turpentine guards against a dangerous exhaustion, and is of use.

The immediate good effects of assisting the bowels in ridding themselves of the black offensive matter is often remarkable. In a Case in which dissolution was threatened, the patient lying on his back, insensible, with diminished temperature of the extremities and clammy perspirations, a copious injection was administered : it operated in a few minutes, bringing away a quantity of most offensive black matter and flatus ; after which, signs of sensibility immediately returned, the sphincter ani recovered its action, and the dejections were passed with consciousness. From this time the patient recovered.

I cannot too much urge the importance of attending to the character of the dejections, and repeat the necessity of the use of aperients as long as they are dark or black, and offensive. They carry off the offensive matter and the flatus, and thus relieve the tympanitic belly.

This diarrhoea must be looked upon as an effort of Nature to relieve herself ; and, where the

strength of the patient serves, the effort will often be effectual.

The signs of the bowels having been sufficiently cleared are a subsidence of the tympanitic belly, and a change in the dejections from a dark to an ochre-colour: and the good effects are a return of sensibility, of natural temperature in the extremities, subsidence of the muttering, and of the flush upon the cheeks, and a general rally of the powers of the system.

Where this diarrhoea is accompanied by an extreme prostration of the powers of life, the patient must be supported by bark and wine, or brandy and water, and camphor. The camphor is a valuable remedy, and should be given every three hours, with eight grains of the conf. opii, in the form of pill. All these stimulant measures to be reduced in quantity as the signs become less urgent.

Although these means of support are necessary and beneficial, they are only secondary measures; and will prove of little avail, unless the bowels are relieved by aperients and clysters. This important fact should not be lost sight of.

If the extreme prostration of strength attending this diarrhoea should induce the physician

to prescribe astringents in combination with tonics, the worst effects will ensue; and the case, probably, prove fatal: or if, when Nature is relieving herself by this diarrhoea, and the tongue is becoming moist and other favourable signs appearing, astringents are had recourse to, the tongue will again become dry immediately, and the muttering delirium and flushed face will return. I have seen this occur many times.

As long, therefore, as the dejections are black and offensive, and the belly tympanitic, (states which always exist together) aperients or clysters must be persevered in, notwithstanding the urgency of the diarrhoea, however great it may be; and, if they exhaust the patient, let him be supported as above described.

The black offensive diarrhoea is generally succeeded by a diarrhoea of ochre-coloured dejections, which is a very favourable sign, and will require a separate consideration.

#### OF THE TREATMENT OF THE OCHRE-COLOURED DIARRHœA.

It has been remarked that the ochre-coloured diarrhoea succeeds the black offensive diarrhoea, and occurs at the decline of the fever, when

the secretions re-establish themselves, and the tongue casts off its dark thick coating, and is left tender, sensible, and sore; and that this state of the tongue probably extends along the intestinal canal rendering it tender, sensible, and sore, also; so that it is easily acted upon by the abundant re-established secretions, and thus the ochre-coloured diarrhoea is formed. The bowels have now recovered strength and have expelled the flatus, and the tympanitic belly has subsided.

This diarrhoea is a most salutary evacuation, and seldom requires to be interfered with. Aperients are not only unnecessary, but highly injurious, on account of the susceptible state of the canal. Nor are astringents required; for the increased susceptibility gradually diminishes, and the action of the bowels becomes natural. Demulcent drinks, as barley water, rice water, gum water, and the like are proper; and, as regards the diarrhoea, no other treatment is called for.

Nevertheless, this diarrhoea will sometimes be protracted, and evidently affect the patient's strength; in which case, the irritation of the bowels must be allayed by small and repeated doses of opium, as three drops of the tinct. opii., which may be given in the mist. amyg-

dal. or mucilage and water, as circumstances require: but astringents should not be had recourse to hastily, nor before it has been ascertained whether the diarrhoea is kept up by any other medicine, or by any article of diet; for it has always a tendency to subside of itself, if it is not aggravated by interference.

Some physicians, for whom I have a very high respect, and whose treatment of the adynamic fever is judicious and successful, are in the practice of prescribing the milder preparations of mercury in this diarrhoea: but I have not found these necessary, because, as has been stated in another part of this work, the pale bile in these dejections is the natural secretion of the liver when the powers of the system are weak, as in the present instance; and because, as the strength returns, the bile assumes its natural deeper colour: and further, because I have seen this diarrhoea aggravated and protracted by the remedies in question.

Sometimes, at the commencement of this diarrhoea, the belly will continue flatulent and the dejections offensive; in which case, the tongue, although nearly clean, will be dry and of a light brown, and the cheeks will be flushed.

Under these circumstances the evacuation of the bowels is not complete, and aperients are, therefore, necessary: but they must be given in very small doses on account of the susceptibility of the intestinal canal. Rhubarb is to be preferred, and five grains is a sufficient dose: which may be repeated every six hours till the flatulence has subsided, and until the dejections have lost the offensive odour, and the tongue has become moist: and these favourable changes will always follow the above treatment.

In concluding my observations on the management of the diarrhoea, I may be allowed to remark that my experience leads me to look upon the treatment of the derangements of the intestinal canal as of far more importance than the treatment of the brain affection; because the affection of the brain is always aggravated by the derangements of the intestinal canal; and, in the latter stages of the fever, is generally dependent upon these derangements.

#### OF THE TREATMENT OF THE RETENTION OF THE URINE.

There is, of course, but one means of relief for the retention of the urine; the introduction

of the catheter. But the manner in which this operation is required to be performed, in ordinary cases, is here ineffectual.

In ordinary cases, there is only a powerless condition of the muscular fibres of the bladder from the straining of over-distention; and, the catheter being introduced, the urine flows freely; and the patient, by the efforts of the abdominal muscles, is able to empty the bladder entirely. But in the adynamic fever patient, not only is the bladder incapable, but the prostration of the powers of the whole muscular system deprives him of the aid of the abdominal muscles; and the collapse even of the parietes of the abdomen, which, in common cases, favours the evacuation of the bladder, is here opposed by the tympanitic distention of the belly; a state existing invariably to a greater or less degree. It is for these reasons, that the distended bladder must, here, be emptied on the principles of hydraulics, as in a lifeless body; and, if this practice is neglected, the bladder will be only partially or not at all relieved; and the retention of urine will continue, and destroy the patient.

The truth of these remarks was illustrated in the following Cases:

An adynamic fever patient, named Bellenger,

was suspected to be labouring under retention of urine. The catheter was adroitly introduced twice, the patient lying on his back. On the first occasion, a very little urine was drawn off; on the second, none. The patient died; and, on dissection, the bladder was found very much distended.

In another Case of a young lady, in whom the distention of the bladder was very great and exceedingly palpable, only a small quantity of the urine could be drawn off while she lay on her back: by turning her on the side, the urine flowed away more freely; but in order to empty the bladder entirely, it was requisite to bring her to the edge of the bed and turn her from the side more over on the belly, by which means the bladder was completely emptied. The surgeon was obliged to have recourse to the same method at each succeeding operation. She died of ventricular effusion; and, on dissection, the bladder was seen perfectly empty.

Although, in this case, there was every reason to believe that effusion was going on in the ventricles, and that the termination of the case would be eventually fatal; yet, the patient sunk most unexpectedly and rapidly after the first drawing off of the urine. The nervous and sanguiferous excitement, produced by the disten-

tion of the bladder, subsided as soon as the catheter had removed the cause ; and the source of this excitement existing now no longer, the powers of life flagged, never rallied, and were extinguished in twenty-four hours. This flagging of the powers of life, after removing the excitement of the distended bladder, resembles very much the sinking of aseitic persons after tapping ; and of patients in the advanced stages of peritonitis, where the belly is distended, and who die immediately this distention is diminished by the operation of a purge.

Therefore, after the bladder has been relieved, the effect on the patient should be carefully noticed ; and, if the powers of life flag, cordials and stimulants should be judiciously and sufficiently administered.

The changing the position of the patient from the back to the side is a means which succeeds in females, but I much doubt whether it would altogether succeed in men ; and, therefore, I recommend the practice adopted by some ingenious surgeons, of adapting a small syringe to the end of the catheter, in order to facilitate and effect the emptying of the bladder.

That the ordinary means, the emptying the bladder by pressure above the pubes, is not ef-

fectual in the retention of urine in adynamic fever patients, has been shewn by example ; and the insufficiency of this practice extends to other cases in which the patient, as in the adynamic fever, is unable to render any assistance ; as in cases of Paraplegia from injury of the spine.

Indeed, I am of opinion that the formidable irritation of the urinary organs, consequent to these injuries, arises from the circumstance of the bladder not being entirely emptied. The portion of urine which is left in the bladder soon decomposes, and gives out the ammoniacal odour attending this state of things. This decomposed urine irritates the mucous membrane of the bladder, and produces the train of distressing symptoms, which always oppose, and often prevent the recovery of the patient.

That the bladder, in these cases of paraplegia, is not entirely emptied, is exemplified by an instance, in which, for the few first days after the accident, the urine flowed freely when the catheter was introduced, and continued, all this time, to possess its natural characters, and the patient to be free from irritation of the bladder. At the end of this period, the urine ceased to flow freely of itself, and the usual quantity could not be got away by means of pressure above the pubes. The Dresser, to

whom much credit is due, believed that the smaller quantity of urine did not depend on a diminished secretion, but on the insufficiency of the means to empty the bladder; and, on applying the syringe to the extremity of the catheter, he was able to draw off a considerable quantity, on every occasion, after he had emptied the bladder, as far as was practicable, by pressure above the pubes.

This patient died eventually; and, on dissection, it was found that the mucous membrane at the posterior surface of the bladder was much thickened, and diseased; and that, at the anterior and lateral parts of the bladder, there were three abscesses, or ulcerative perforations of the mucous and muscular tunics. These three abscesses corresponded exactly with the parts to which the point of the catheter had been directed, in drawing off the urine; and the Dresser, as well as myself, concluded they were caused by the pressure above the pubes acting upon the point of the catheter.

The disease of the mucous membrane at the posterior part of the bladder may be attributed to the irritation of the decomposed urine lying upon that part more particularly.

If, then, the formidable irritation of the urinary organs attending injuries of the spine,

arises from the incomplete emptying of the bladder; any means, which could secure this desirable object, might prevent such irritation. And, in the retention of urine in men affected with the adynamic fever, pressure above the pubes should not always be relied upon, but recourse be had to the syringe.

In no disease is the practitioner more called upon to attend to the urinary secretion than in the adynamic fever; for not only does retention of urine take place, but the secretion itself will be sometimes nearly suspended; and effusion into the ventricles of the brain accede, as in ordinary cases of suppression.

#### OF THE TREATMENT OF THE DELIRIUM.

The treatment of the various degrees of the brain affection, of which the delirium is a sign, has been so much discussed under the different divisions of the treatment, that it is only necessary here to make a few general observations.

The guide in the treatment of the delirium, as regards blood-letting, is to be found in the degree of muscular power evinced by the pa-

tient, and in the force of the circulation. Where the efforts are strong, and the stroke of the pulse resisting, blood-letting may be used with advantage. But, by strong efforts, I do not mean the jactitation and restlessness, and the mere power of getting out of bed; these are not indications of strength, for such efforts are easily controlled. I mean where the strength is equal to the strength of the patient when in health, or greater; and where it is not easily overcome: and where there is, also, a continued exertion of this strength; for a weak man may give an occasional powerful struggle, which he could not quickly and frequently repeat.

The force of the circulation is judged of by the incompressibility and fulness of the pulse; which states have been particularly discussed under the section on "The Pulse."

The first blood-letting should never exceed twelve ounces, under ordinary circumstances; and its effect upon the patient should be carefully noted before it is repeated.

A second blood-letting must not be prescribed if the patient's strength has been much reduced by the first, although the delirium may not be materially mitigated: nor should it be prescribed under the same circumstances of reduction of

the strength, even if the delirium is mitigated, in the hope of mitigating it further; because, if the abatement in the violence of the delirium is only in proportion to the reduction of the patient's strength, it is a fallacious sign, and should not tempt a repetition of the abstraction of blood; as the consequence might be a dangerous depression of the powers of life.

A second blood-letting is called for where the first has not much influenced the strength of the patient, and of the pulse; and where the character of the delirium remains the same.

Generally speaking, the local abstraction of blood, by cupping behind the ear, is preferable; as doing much good and little harm.

The abstraction of blood from an artery, as the temporal, I can in no way recommend in the adynamic fever. I have seen it performed frequently, and it has always been succeeded by a depression of strength more or less dangerous.

In all cases of delirium where there is great prostration of strength, blood is seldom required to be drawn; never, certainly, from a vein; and in small quantities, only, by cupping.

The physician should first empty the bowels

of their vitiated contents; by which measure he will find the delirium much alleviated: and the delirium will be further and remarkably alleviated by the opium and hyoscyamus, which allay the cerebral excitement. Even in the worst cases of delirium, these medicines should be administered after blood has been abstracted and the bowels cleared; and in rather large doses.

When patients are unruly and struggle much, and attempt to get out of bed, it is often customary to bind them down on the back in bed, by means of a straight-waistcoat and straps: but I beg to warn professional men against permitting any such practice: Patients will continue to struggle, and I have known the restraint attended by fatal consequences in two or three instances. In one, where the patient was bound down at midnight, he was found dead at four o'clock in the morning; although his symptoms the preceding night did not indicate immediate danger, nor could dissection discover any adequate cause of death. In another, the struggling caused a rupture of a blood-vessel in the left lung, and effusion into its substance, constituting pulmonary apoplexy; and which produced sudden and unexpected death!

The struggling against an unyielding power exhausts the strength infinitely more than against a power which gives way: just as a person falling from a height on the pavement in the street, receives a much more serious injury than if he had fallen upon a sack of wool. Whenever restraint is necessary, it should be imposed by attendants placed near the patient for that purpose.

OF THE TREATMENT OF THOSE CAUSES WHICH RETARD CONVALESCENCE OR PREVENT RECOVERY.

The treatment of that peculiar state after the decline of the adynamic fever, which is seen in those who have suffered from scanty and bad food prior to the attack, and which has been particularly described, is very simple: the chief point being not to do too much. This state has been said to depend on a defective supply of blood to the brain, there being great weakness of the physical powers, and but little blood in the body; and, therefore, as soon as the quantity of blood is a little increased and the strength recruited, the unpleasant signs, as the staring eye, the watching and

the delirium, cease; and the recovery is progressive and satisfactory.

The only means of increasing the quantity of blood is by food; which should be allowed frequently, but in very small quantities, consistent with the weak powers of the stomach: the slightest deviation from this rule will be severely felt. The decoction of bark may be tried in the dose of one ounce three times a day; but it does not always prove useful. Opium and hyoscyamus are to be avoided; they do harm. It is better to wait patiently the effect of diet.

Constipation is to be obviated by very gentle aperients. Purging is exceedingly injurious.

THE TREATMENT OF THE IRRITATION OF THE LIVER AND STOMACH WITH BILIOUS VOMITING is difficult. The three cases described were all dangerous; one fatal.

As internal remedies, I made trial of all which have usually been said to be serviceable in allaying bilious vomiting; as magnesia, soda, ammonia, opium, conium, saline draughts in a state of effervescence, infus. menth. virid., conf. rosæ with the acid. sulph. dilut., decoct. cinchonæ filtered, soda water with brandy, and so on.

They were of no avail; and the greater part aggravated the vomiting.

The opium, at one time, would seem to be of use; at another, injurious: the filtered decoction of bark did no harm, it remained on the stomach better than the other medicines; but, as it was occasionally followed by vomiting, it was discontinued from its evident inutility. Every thing, indeed, taken into the stomach kept up the vomiting; and, therefore, it was determined not to administer more: and the patient certainly vomited less when internal remedies were laid aside. Small blisters over the region of the stomach had always more or less effect in diminishing its irritability. Food and drink were withheld as much as possible, so that the stomach might be free from any source of excitement from without; and, at this period, beef broth was injected per alvum, twice and thrice a day, to support the strength. These injections frequently returned, the mucous diarrhoea continuing; but, by adding fifteen or twenty drops of the tinct. opii occasionally, this inconvenience was, in a great measure, counteracted. It is singular that the patients had an almost constant desire for food; and, after vomiting up what had just been taken, felt a desire for more.

By not allowing any thing to be taken into the stomach except a spoonful of toast and water with a little brandy, as occasion required ; and by persevering for fourteen days and upwards in the broth injections ; the bilious vomiting and the diarrhoea gradually subsided, the stomach was able to retain very small quantities of food, and ultimately convalescence was established. Both the patients who recovered were females : one of them died a few months afterwards of phthisis.

In this irritation of the liver and of the stomach with bilious vomiting and diarrhoea, I should, therefore, recommend abstinence from food and medicine ; the strength to be supported by beef-broth injections ; small blisters to the pit of the stomach ; and a little brandy and water, as circumstances require.

THE END.

